

AMERICAN ARTISAN

AUGUST 1948

68th Year

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING

This Issue

determine just how much you can sell, you first must know how many people are logical prospects. Page 75 for market analysis.

Anthratube is a significant development in oil-fired heating equipment. The warm air version is described on Page

New series on sheet metal shop layout by E. E. Beck starts on Page 100 this issue. Many valuable ideas are discussed.

Complete report on the 4-Year Meeting of the NAAH & ACA will be published beginning on Page

The staircase shown is a feature of the Stainless Steel Industry Exhibit in New York City. Page 104



LAMNECK

* *Simplenic*

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Easy to Remember, Easy to Use... and, in fact, the convenience and simplicity of the entire application of the Simplenic System is just as easy as the figuring. This great new low-cost forced air system — the first extended plenum system in the industry — is providing the way to greater efficiency and greater profits for enthusiastic heating contractors all over the country.

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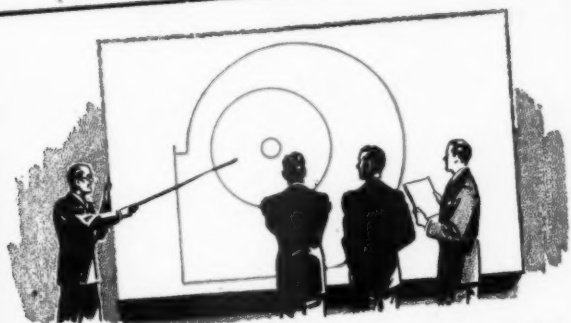
1760 Dixie Highway • Louisville 10, Ky.

Lamneck

**FURNACE PIPE
AND FITTINGS**

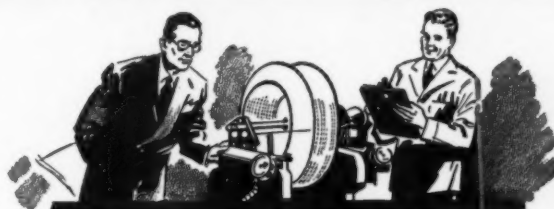
Blower-ology

A QUIZ
TO KEEP YOU
UP TO DATE.

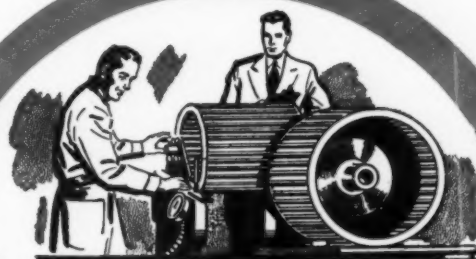


1 THE CURVATURE OF A BLOWER SCROLL HOUSING AFFECTS ALL BUT ONE OF THE FOLLOWING. WHICH ONE?

- (A) POSITIVE VELOCITY (D) QUIETNESS
(B) STATIC PRESSURE (E) AIR TEMPERATURE
(C) POWER CONSUMPTION



2 TESTED AT 5000 RPM, THIS USAIRCO BLOWER WHEEL SHOWS PERFECT BALANCE. IS THIS SINGLE TEST CONCLUSIVE? ☐ YES ☐ NO



3 FOR A RESTAURANT INSTALLATION, YOU COMPARE TWO EQUALLY RATED BLOWERS. UNIT "A" SHOWS TIP SPEED OF 2820 FPM . . . UNIT "B" HAS TIP SPEED OF 3100 FPM. WHICH WOULD YOU CHOOSE? ☐ UNIT "A" ☐ UNIT "B"



4 A LARGE HOSPITAL ASKS FOR SUGGESTIONS ON BLOWER SYSTEMS FOR OPERATING ROOMS, WARD ROOMS, AND POWER PLANT. HOW SHOULD YOU START?

ANSWERS

1 Air temperature won't be affected . . . but all the others—and operating costs—and user satisfaction—certainly will! Because the delicate physics of scroll design is so important, usAIRco engineers have become recognized authorities on the subject.

2 No, indeed. A static balance test is fully as important as a dynamic test . . . so usAIRco engineers use *both* on all blowers. In addition, many other searching tests are "routine", at usAIRco.

3 Noise in a restaurant is no asset . . . and noise is a function of the blower wheel's tip speed. So of course you'd choose a blower designed for highest efficiency at lowest speed . . . in other words, a usAIRco blower! Choose unit "A".

4 Start by writing usAIRco for helpful, personal, confidential engineering consultation. Many, many jobs can be won by using this free, specialized, expert service . . . and we're more than happy to cooperate in every possible way!



THERE'S A TYPE
AND SIZE OF
usAIRco BLOWER
FOR EVERY NEED.

UNITED STATES AIR CONDITIONING CORPORATION
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usAIRco

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING

Member—Audit Bureau of Circulations
Member—Associated Business Papers

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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EDITOR

JOHN E. PETERSON

ASSOCIATE EDITOR

JOHN McCULLOUGH

ASSISTANT EDITOR

A. A. KENNEDY

ADVERTISING STAFF

WALLACE J. OSBORN
New York City
Murray Hill 9-8293

ROBERT A. JACK
Cleveland
Yellowstone 1540

JAMES D. THOMAS
GEORGE C. CUTLER
Chicago
STate 6916

R. PAYNE WETTSTEIN
Los Angeles—TUcker 2779
San Francisco—YUkon 6-2522
Seattle—ELiot 2365
Portland—GARfield 1903

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago 2, Ill., U.S.A.
Copyright 1948 by Keeney Publishing Company

Publisher—FRANK P. KEENEY

Manager—CHARLES E. PRICE

Production Manager—L. A. DOYLE

Yearly Subscription Price—U.S. and possessions, \$3.00; Canada, Cuba, Mexico, South America, Central America, \$4.00; Others, \$6.00. Single copies, U. S. and possessions, \$.35. Back numbers, \$.60. January, 1948, Directory Issue, \$1.50 per copy. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the Act of March 3, 1879. Additional entry at Milwaukee, Wisconsin.

Founded 1880

AUGUST, 1948

Volume 117, No. 8

AMERICAN ARTISAN, AUGUST, 1948

SYNCROMATIC



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A Heavy-Gauge Steel — In all
sizes for Natural, Manufactured
and Butane Gas



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In Gravity or Forced Air
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showing **COUNTERFLOW** design that utilizes
heat units to best advantage.



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NOT ALL ALIKE
You Just Can't Beat

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for **COUNTER FLOW DESIGN**
ECONOMY
PERFORMANCE
BEAUTY AND
EASE OF OPERATION

Syncromatic Corporation
WATERTOWN, WISCONSIN

the editor's notebook

Business Outlook

"The almost unanimous opinion that we are facing continued high level prosperity for the next six to twelve months is somewhat frightening. Such unanimity frequently precedes collapse, and is apt to intensify the boom for a spell and lead to further distortions in the price and wage structure.

"Pressure on prices is likely to continue, although grain and a few other prices may be somewhat lower.

"The residential construction industry is some 25 per cent ahead of last year. The automobile industry has enough orders on hand to sustain output for perhaps two years; investment in plant and equipment is likely to be close to \$20 billion this year, substantially ahead of the last two years.

"Our net export balance (the portion for which we get no return) will continue strong. State and local governments are expanding public works.

"The third round of wage increases will pay into the hands of consumers some \$8-12 billion of additional income. Little of this increase will be saved.

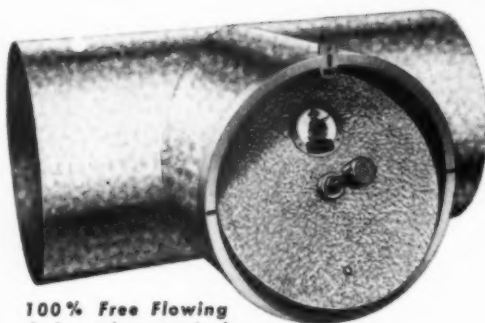
"Some pipelines are filling up and a few industries are facing readjustments. But since these readjustments are taking place one after the other and demand is shifting to other lines, the occasional soft spots would not seem to forebode general recession.

"Individuals and businesses today hold about \$237 billion in liquid assets in the form of currency, bank deposits, and savings bonds. Of this sum,

Sentry

FUEL AND HEAT CONTROLS

SENTRY DRAFT REGULATORS



100% Free Flowing draft—when required

All unnecessary working parts have been eliminated in this new economical and efficient draft control. Baffle plate and mounting ring are of durable light weight aluminum—bearings and pivots of non-corrosive brass. This permits free, automatic operating action and feather-light sensitivity to the slightest air currents at all times—as well as assurance of long life. Pre-setting balance is carefully factory adjusted. Sentry regulators are available in sizes from 4" through 10" in diameter for horizontal or vertical pipe installations.

AT-A-GLANCE TANK GAUGES

The outstanding gauge in the field, it was chosen for nearly 50% of the installations made in 1945-46. Clear visibility with accurate, easy reading from all directions is only one of its many features. In addition, simplified mechanism eliminates intricate working parts such as gears, cams, springs or magnets which often cause trouble and wear out. Fully approved and listed as standard by the Underwriters' Laboratories, Sentry at-a-glance gauges are durably built, guaranteed leak-proof and will withstand filling pressure of more than 50 lbs. per sq. inch. Installation is quick and easy—even when a tank is partially filled. Sentry gauges are factory designed and constructed to fit all tank sizes and shapes, including barrels and drums.



Write for fully illustrated brochure.



KRUEGER Sentry PRODUCTS
GREEN BAY • WISCONSIN

the editor's notebook

individuals hold about \$172 billion, and while perhaps one-fourth of families have little or no savings, this general picture indicates a high degree of liquidity which will encourage the prompt spending of current income.

"The Federal budget for the next year is likely to be roughly in balance so that it will not make any substantial net contribution to deflation or inflation.

"Money is turning over more rapidly. Consumer credit is expanding and is about twice the 1929 figure, up about \$3 billion over last year.

"All these factors indicate a strong demand, both in labor and in the goods market. We are operating at virtual ceiling capacity.

"In the past two years our output of goods has been rising only slowly, but we have added nearly \$1 billion a month to the wages and salaries of our people. This explains the upward price pressure.

"Total production cannot be expanded very much in the short-run, although efficiency is improving.

"The gray market in steel, aluminum, farm machinery, some building supplies, and automobiles continues and is likely to do so for some time.

"Furthermore, inflation is so pleasant to about 90 per cent of the American people it is hard to get anything done about it; jobs and wage increases are easy to get, profits are high, real estate is booming, debt burdens are being eased through rising price levels, and nearly everyone is enjoying the free ride so long as it lasts."—Dr. Emerson Schmidt in *Business Action*.

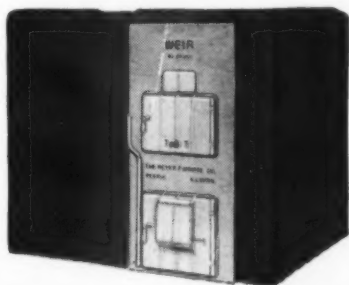


Here are the Facts about 'All-Fuel' Furnaces:

Don't kid your customers or be fooled yourself! A "conversion job" just can't be as efficient and economical as a unit designed and built for a specific fuel!

But, of course, your first job is to assure your customers efficient heating despite widely varying fuel shortages. That means that sometimes you will have to sell a coal furnace for later conversion to gas or oil; be sure that it can be done efficiently.

The Weir all-steel U Series Furnace is your best bet where conversion is likely. Designed to burn coal, coke, wood, or cobs, its revolutionary, permanently leakproof Integral Heating Element (Pat. applied for) facilitates installation and permits efficient conversion to oil or gas, including L. P. On solid fuel it's "tops"; converted, it's the next best thing to Weir-Meyer equipment especially designed for gas or oil.



WEIR-MEYER means modern heat

Weir-Meyer equipment, including modern Winter Air Conditioners, is available for every fuel, for every installation. Remember, if it's Weir-Meyer, it's first-line equipment of proven salability! Weir-Meyer distributors and dealers know that the Weir-Meyer franchise means undisputed leadership. Inquiries from aggressive dealers are invited — there's still some "open" territory.

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PEORIA 2, ILLINOIS



Gas-fired Hi-boy



Gas-fired Air Conditioner



Gas-fired Gravity



Oil-fired Hi-boy



Oil-fired Air Conditioner



Weir Steel Furnace



Coal-fired Air Conditioner



Industrial & Commercial Heating Equipment

MANUFACTURERS OF WEIR & MEYER FURNACES - AIR CONDITIONERS FOR GAS - OIL - COAL - FACTORIES: PEORIA AND PERU, ILLINOIS

the editor's notebook

Aftermath

Since the end of the past terrible war, I have been trying to get in touch with my remaining relations. I respectfully ask you to help in tracing them.

I am searching for my granduncle, Erich Marold, who would be about 85-90 years of age. He was born on Forst-Lausitz and was a cabinet-maker by trade. In 1902 he emigrated from Forst to the U.S.A. and at that time resided in Millbury, Massachusetts. He had children who today would be 40-50 years old.

I should be very much obliged if you would kindly help me locate them and forward this letter of inquiry as they do not know my present whereabouts.

Thanking you in anticipation for your esteemed efforts, I am

HANS FOCHLER
Hinter dem Berge
British Zone, Germany

We would appreciate hearing from readers in the vicinity of Millbury, who have any information about Erich Marold, or his kin. Since he came to this country as a cabinet-maker, possibly he or his children have been engaged in the building trades and are known by some of our readers.—ED.

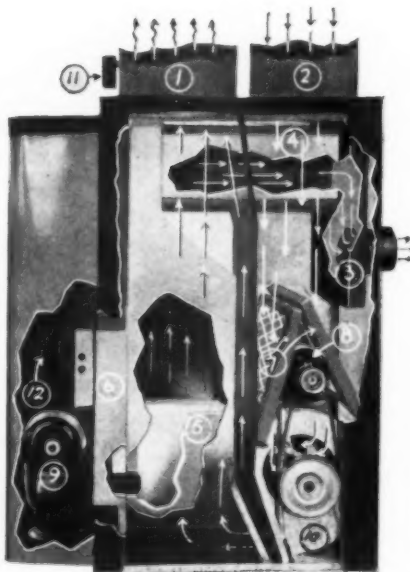
Business Census

Early next year, somewhere between three and four million non-manufacturing firms will be visited by census-takers.

Of immediate importance is the fact that after eight years in which major changes occurred in the national econo-



**Quality and Beauty
AT LOW COST!**



**5 Sizes Counter-Flo Basement Type
66,000 to 200,000 Btu.**

**2 Sizes Utility Type Hi-Boys
85,000 and 100,000 Btu.**

One Gravity Furnace—76,500 Btu.

**A SIZE and TYPE for EACH HOME
NATION-WIDE DISTRIBUTION**

Write—

J. V. PATTEN COMPANY

Sycamore, Illinois

the editor's notebook

my, up-to-date information will be obtained on the size of our business establishment, its location, composition, sales, employment, and payrolls.

Legislation revising the entire schedule of business surveys and providing for a 1948 trade census—to be taken in 1949—was passed during the closing days of the last session of Congress.

The new law provides for a regular coordinated program of business surveys. Instead of taking a census of manufacturers every two years, and non-manufacturers every 10 years, all censuses, plus a new census of transportation, will be taken together every five years.

Direct benefits from the census will not be readily apparent to the firms who supply the information. However they will benefit through the use made of the figures in the trade press, marketing and advertising agencies, wholesalers, manufacturers, and business statisticians.

Letter from S. A.

I subscribe to HEATING, PIPING & AIR CONDITIONING and found a sample copy of AMERICAN ARTISAN so interesting that I am trying to enter a subscription for it also.

I expect to open a sheet metal shop in Lima, but lack information about sizes and prices of sheet metal tools and machinery. I would be very pleased if you would send me the names of manufacturers of sheet metal equipment and a list of the items needed to start a shop.

HUMBERTO ZELAYA
Mercatoria S. A.
Lima, Peru.

POSITION WANTED:

With one man, or even an apprentice to help me, I can seam ducts or fittings faster than all the rest of your shop can cut and notch them for me. I can put a Pittsburgh Lock, for instance, on an eight foot duct in less than 20 seconds—and I can keep this speed up all day long. I'm just as good on drive cleats, flanges, double seams and standing seams, too.

I can guarantee to cut your over-all fabrication costs *in half* as against press brake methods, and the work I do has a "factory-made" precision and uniformity.

The rest of your men will like me as soon as they meet me, because I'll relieve them of a lot of hard work. They'll like me even more when they see how easy my stuff is to assemble. But you'll like me best of all because I'll make money—and lots of it—for you!

I can supply the finest references in the Industry. I've worked, (and still do) in the best shops, large and small, in the country. I can report for work in about 10 days and, unless you already have one of my brothers working for you, I can easily prove that it's costing you money to try and get along without me.

My present address is 4615 Roosevelt Road, Chicago 50, Illinois. Write me and I'll be glad to give you the rest of my qualifications. My name is Lockformer.

the editor's notebook

Three Warm Air Systems

Viking News and Views, issued by the Viking Air Conditioning Corporation, describes in a recent issue a triple-threat heating system—conventional winter air conditioning, ceiling panel, and a combination of convection and radiant heating. All three were provided for in the plans of a bedroom addition, although just the ceiling panel was originally planned, just in case the books might be wrong.

During the first winter the three systems were tried out successively. First, the ceiling panel was closed off and the room was heated by high sidewall registers—conventional winter air conditioning. The results were quite satisfactory, as might have been expected.

After sufficient trial, both the supply and return registers were closed and the air was directed through a 2½ in. air space in the ceiling—ceiling panel heating. At first there was trouble because it required a higher static pressure to force air through the narrow ceiling space than it did through the ducts and supplying the other rooms. This problem was overcome with an auxiliary blower. Again the results were good. The room was comfortable and the floors were warm.

Finally the third system was put in service. The ceiling panel was used as before, but instead of conducting the air from the ceiling to the crawl space under the floor, the air was discharged through the high sidewall registers. That this system works very satisfactorily is attested to by the fact that it is still arranged for convection-radiant heating.

SAVES UP TO 30% ON FUEL OIL!

HOMES ENJOY ADEQUATE HEAT ON LESS FUEL!

MORE OIL AVAILABLE FOR NEW BURNER SALES!

EASY TO SELL—PROFITABLE!

HELPS OFFSET YOUR LOSS OF NEW BURNER SALES!

Amazing New Sampsel SEQUENCE DRAFT CONTROL for oil-fired furnaces and boilers!

Here's What It Does!

Based on the principles long used in industrial and commercial installations, the Sequence Draft Control increases heating plant efficiency and makes major fuel savings for homes. By preventing natural draft from cooling the heating plant, it greatly increases time between firing periods. "Stored" heat goes into the home instead of up the chimney.

Start Selling It Now

The Sequence Control is the greatest fuel-saving and sales-building idea offered oil burner dealers in years! It can stretch your customers' fuel oil supply up to 30% . . . in many cases that means complete freedom from worry about shortages. It makes more oil available for new burner sales. It's a real profit builder for you. Write for complete information today.

The Sampsel label on automatic heating controls is your guarantee of quality. Sampsel Controls assure best possible performance from the heating equipment you build or sell, for any fuel.



Sampsel Time Control, Inc., Spring Valley, Illinois

the editor's notebook

All of this seems to show that any of the systems properly installed and operated can be depended upon to give comfort and satisfaction, and that there are inherent advantages to the system that provides air circulation, cleaning, and humidification.

Cooling Breezes

When you are hot, your body is blanketed with a layer of stagnant air. Air can absorb only so much moisture, and the batch surrounding you becomes saturated with it on hot humid days and nights.

To keep calm, cool, and collected the air must circulate in a room about once every two minutes.

The principles, engineering, and installation of fan cooling are so simple that this economical method of summer relief is often overlooked in heating and sheet metal circles. Many sales are made by inexperienced personnel who lack knowledge of air handling problems and overlook the need for generous capacity. Good results require more than the capacity of the common office fan.

Night cooling an entire house requires adequate equipment, such as the attic or window type fans. One of these installations can readily drop inside temperature within several degrees of that outside. It also supplants the hot, humid, stagnant air with fresh and cooler outside air.

If you have any doubts about this effective method of economical cooling—try one. When you experience its comfort you will start to sell cooling breezes during the remaining hot days in late summer and early fall.

TODAY your prospects want fuel flexibility



NEW Thatcher 481

Look at these 7 big selling features

- **FULL-SIZE REVERSIBLE BLOWER CABINET** — complete flexibility, install it on either side of the unit.
- **LARGE CAPACITY RUBBER MOUNTED BLOWER** — generous air circulation, more efficient heat transfer, quiet.
- **REPLACEABLE FILTERS** — throwaway type, easy to get at, generous filtering area.
- **HIGH RATIO OF HEATING SURFACE TO GRATE AREA** — delivers extremely high percentage of heat from fuel.
- **MASSIVE FRONT CASTINGS—LARGE DOORS—CAST IRON GRATES** — for long life, easy fire tending.
- **HEAVY GAUGE STEEL HEAT EXCHANGER** — permanently welded into a gas tight compartment.
- **HANDSOME CASTILIAN-RED JACKET** — lined with air-metering inner casing.

This all-purpose Winter Air Conditioner designed For COAL — Converts QUICKLY and EASILY to OIL, GAS or STOKER, and operates with high efficiency.

Heating comfort through any fuel emergency! That's what you sell homeowners with Thatcher's NEW Series 481.

Here's the fuel flexibility homeowners want right now. And in the 481, it's backed by Thatcher's 98 years of heating know-how. This unbeatable combination means more sales, more easily. For complete details on the Series 481, write to us today.



GARWOOD, NEW JERSEY



Comfortmaster
Oil-Fired
Air Conditioner



Comfortmaster
Gas-Fired
Air Conditioner



Triple-Fire
All-Purpose
Boiler



Oil Master
Automatic
Oil-Fired Boiler



Thermaster
Gravity
Furnace



New 550
Oil-Fired
Air Conditioner



New A-204
Oil-Fired
Air Conditioner

*the editor's
notebook*

Our Obligations

We have tremendous international responsibilities, and we mean to fulfill them.

But we have no responsibility exceeding that owed to the American taxpayer. We owe it to ourselves to see that American dollars do the job intended—that our help really helps instead of impoverishing Americans to pamper if not pauperize Europeans.

Our supreme obligation is to see to it, by constant and close Congressional supervision and practical business administration that the European relief program does not become a gigantic government pork-barrel program.

The Federal Payroll

And the Federal government payroll grows bigger every day. Since last January 1, the number of civilian employees on the Federal payroll has increased at an average daily rate of 469—through April, 56,250 new employees.

Reversing the previous postwar trend, the number of Federal employees increased by 6,340 in January—a rate of 204 a day. Apparently under the impetus of new spending, the payroll grew at an expanding rate of 457 persons a day in February, 551 in March, and 632 a day in April.

This new trend was revealed by the most recent report of the Joint House-Senate Committee on Nonessential Federal Expenditures.

By April of this year, the Federal government had more than two million civilian employees—that is, one for every 21 Federal income taxpayers in the United States. When the payrolls of the state and local governments are added

SAVE

TIME & MONEY

with

AGE

Soldering Torch

NO. 75-S



Operates on BOTTLED GAS



Torch interchangeable with
Furnace No. P5

- on the job
- in the shop
- continuous heat
- no waiting
- no waste
- easy to regulate

MODEL 75-S

This soldering torch is popular with roofers and sheet metal men because of its continuous application of heat which reduces lost time. Flame intensity is regulated by a needle control valve. No carbon is formed in burner or orifice. May be equipped with the 2 or 5 pound straight soldering coppers.

WRITE or telephone, without obligation.

WHOLESALE and JOBBERS inquiries invited.

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Phone COncord 4 6556

MILWAUKEE 6,
WISCONSIN

*the editor's
notebook*

to the Federal total, there is one government worker for every 16 adult Americans.

The all-time peak for Federal employment was reached in August, 1945, when there were more than 3,600,000 civilians on the payroll. Then, with the Japanese surrender in Tokyo Bay, Federal employment showed a rapid decline. Last December, the total went below the two million mark for the first time since 1941. But even the "low" December total of 1,994,000 was more than twice as large as the number of Federal employees in 1939 and close to four times as large as the total in 1932.—*Tax Outlook.*

Worker Productivity

A survey of worker productivity shows that output continues to show up badly. Current output per man-hour compares with that of 1941, whereas it should be 15 to 20 per cent higher.

Throughout our industrial history productivity has increased about three per cent a year. After World War I it advanced about 10 per cent a year, making up for the war years. This has not been so during the current postwar period.

Despite better facilities some industries show a marked reduction in output, some an increase, and some about the same as 1941.

The solution of the inflation problem lies in producing more goods with less effort. It is a question of how much goods money will buy instead of how much money is in the pocket.

The explanation seems to be a sag in effort and interest and slowdowns caused by shortages.

Close-up of a PETRO owner "selling" you to his neighbor



OBSERVE A HOMEOWNER telling his friends about you and the Petro you've installed for him, and you'll see him bubble over with enthusiasm. For to him a Petro means oil heat at its best. Nothing can match it for fine heating performance and year-round economy.

In this way more and more homeowners are being "pre-sold" on Petro—to your benefit and profit!

Oil burners, boiler-burner units, furnace-burner units, water heaters—they're all carried by the established heating and plumbing jobber in your wholesale trading area.

PETROLEUM HEAT AND POWER COMPANY

Stamford, Connecticut

Makers of Good Oil Burning Equipment Since 1903

REFINERIES...FUEL OIL STORAGE AND DISTRIBUTION TERMINALS
NATIONWIDE OIL BURNER SALES AND SERVICE FACILITIES

WHAT ELSE DO YOU GAIN WITH PETRO?

OUTSTANDING SELLING FEATURES, such as patented "Tubular Atomization" assuring your customer more heat from less fuel.

VIGOROUS PROMOTION THROUGH NATIONAL ADVERTISING, reaching every oil burner prospect in your territory . . . building up a preference for Petro and helping pre-sell you as a leading heating contractor in your community.

PRODUCT DEPENDABILITY, reflecting over 45 years' oil heat "know-how" of the world's oldest, largest exclusive oil-heat equipment maker.

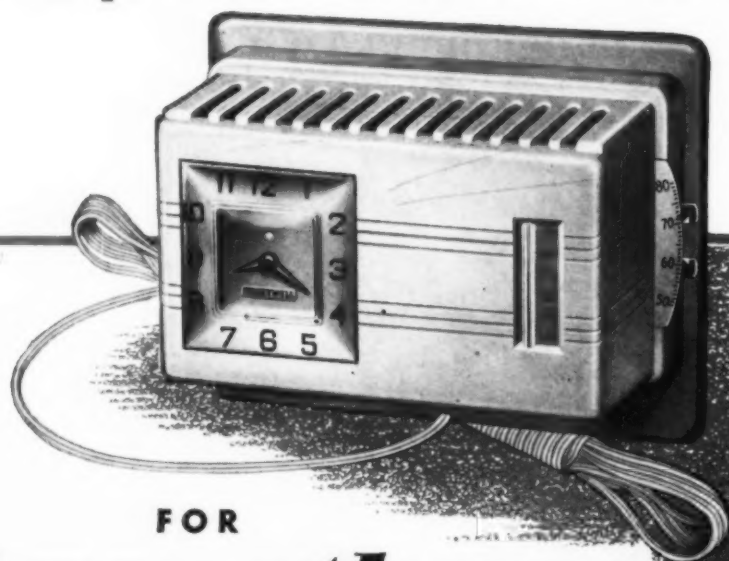
PETRO

REG. U.S. PAT. OFF.

OIL BURNERS • BOILER-BURNER UNITS
FURNACE-BURNER UNITS • WATER HEATERS

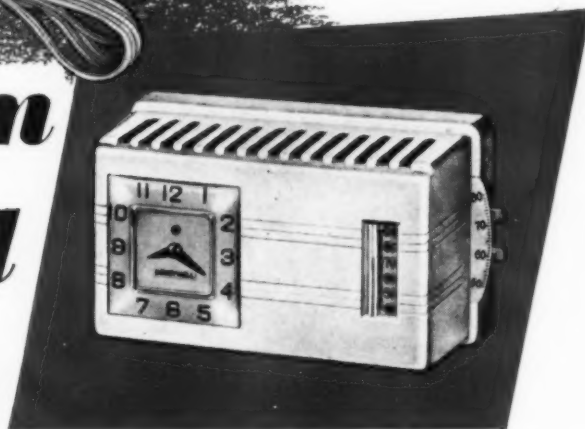
"PLUG-IN"

Opens New Markets



"Plug-In" Chronotherm — a quick replacement for manual thermostats.

FOR *Chronotherm Comfort and Fuel Saving*



Standard Chronotherm — for all new installations.

HERE'S a new electric clock thermostat specifically designed to fit the huge market for replacement sales. It's Honeywell's spectacular "Plug-In" Chronotherm, an over-the-counter item that any householder can ordinarily install in less than 10 minutes to replace his manual thermostat.

The "Plug-In" combines every feature of standard Chronotherm, including the vital *fuel-saving* advantage of automatically lowered night-time temperature. And for you, every 10 Chronotherm sales actually represent enough fuel saved for another burner installation.

So cut yourself in on the profits from the nationally advertised "Plug-In." Sell it as a package and let your customers connect it. Send out your salesmen. They can connect it while they demonstrate it. Have your service men carry it and show "Plug-In" Chronotherm on every call. And for new homes, new installations, always sell standard Chronotherm—long the leader in its field. Write today for advertising, direct mail and promotional material. Minneapolis-Honeywell, Minneapolis 8, Minnesota. In Canada: Leaside, Toronto 17, Ontario.

....NATIONALLY ADVERTISED....

To build mass acceptance quickly, the "Plug-In" is being promoted in leading magazines: *The Saturday Evening Post*, *Collier's*, *Better Homes and Gardens* and many others. Cash in on the demand this advertising is building.

MINNEAPOLIS
Honeywell
CONTROL SYSTEMS

73 BRANCHES FROM COAST TO COAST WITH SUBSIDIARY COMPANIES IN: TORONTO • LONDON • STOCKHOLM • AMSTERDAM • BRUSSELS • ZURICH • MEXICO CITY

AIR EQUIPMENT TO HELP YOUR BUSINESS

READY FOR YOU—

These Latest Answers To Your Air Problems



808 Pages on:

- fans
 - air flow
 - sound laws
 - air properties
 - air conditioning
 - humidity
 - heat
 - heat transmission
 - drying
 - cooling
- and a wealth of other up-to-date air-engineering facts:

Fifth Edition

FAN ENGINEERING

PRICE

\$6.00

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It's an enlarged, up-to-date
5th edition of the famous
handbook edited first in 1914

by Dr. Willis H. Carrier, then Chief Engineer of Buffalo Forge Company. As previously, this 5th edition is edited by Richard D. Madison, who is widely and favorably known in the heating and ventilating field. It covers thoroughly and authoritatively major phases of fan design, air handling and air conditioning. Many topics such as air-flow, sound, dust collection, and material handling have been amplified so that this 5th edition pocket size (4½" x 6¾"), \$6.00 per copy, is more than ever a necessity for the man concerned with the movement and distribution of air or gases.

BUFFALO FORGE COMPANY

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Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

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EQUIPMENT FOR

★ VENTILATING

★ HEATING

★ COMFORT
COOLING

★ PROCESS
COOLING

★ AIR
TEMPERING

★ AIR
WASHING

★ EXHAUSTING

★ BLOWING

★ FORCED
DRAFT

★ INDUCED
DRAFT

★ PRESSURE
BLOWING

★ CLEANING

★ DRYING

CUTTING AIR COSTS IN EVERY BRANCH OF INDUSTRY

Ask yourself these important questions about your heating business

- Do you have to stock many different models to meet your customer's requirements? Does this high inventory cut into your profit?

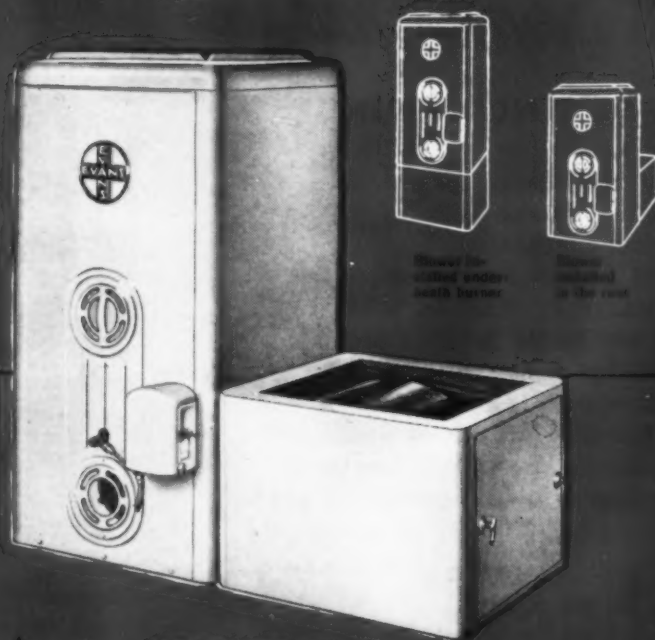
- Does the equipment you handle require complicated installation that cuts into your sales volume? Does it have to be wired and assembled? Does it need difficult duct work?

- Do you have to order "special" equipment for your installations? Do you have to "tailor" your line to fit customer's needs? Do your jobs lag because of made-to-order requirements?

- Do your customers trouble you with service calls? Is your equipment plagued with mechanical troubles? Nozzles clogged? Parts worn out?

- Is the line you handle really competitively priced to meet today's customer resistance? Does the model represent real sales value in its price bracket? Is it equipment that has genuinely low operating costs?

- Do you have a line designed to meet the needs of the small home owner . . . the market where real volume and profit lie? Are the models completely automatic? Are they engineered to produce plenty of heat at low cost?



MODEL 388

A forced air furnace that takes the place of 2 separate units. A compact, automatic unit for basement, closet or utility room. 52,500 B.T.U. output. A powerful 10" Shroeder blower circulates filtered warm air in winter . . . cool air in summer. Blower also may be installed at sides.



MODEL 378

A space saving forced air furnace. A compact, fully automatic, factory wired and assembled unit, ready for installation in closet, basement or utility room. 52,500 B.T.U. output.



GET BEHIND **EVANS**

EVANS has the answers in **BASIC SALES ADVANTAGES THAT ARE REAL SALES PRODUCERS**

From twenty-five years of experience as one of the world's largest manufacturers of heating and air moving devices EVANS brings you a line of heating equipment tailored to meet your sales requirements.

Only EVANS gives you a line designed to keep your inventory low, your profit margin high, and your installations simple. Here are the facts! See how they meet your needs ... and you'll want the EVANS line.

**Only EVANS brings you 4 basic units
that cover 84% of your heating installations**

4 for 84 MEANS BIG SALES VOLUME WITH SMALL INVENTORY

When you handle the EVANS line you stock only 4 units to economically and profitably sell 84% of the heating market.

4 for 84 MEANS FAST SIMPLE INSTALLATIONS

Each Evans unit is completely assembled, wired and packaged ... may be installed in hours, not days on combustible floors within two inches of walls.

4 for 84 MEANS THE RIGHT EQUIPMENT FOR ANY INSTALLATION

Evans automatic furnaces fit in closets, utility room or basement. Evans floor furnace takes no room space, fits in the floor. Evans automatic conversion burner fits any type furnace.

4 for 84 MEANS LESS SERVICE, FEWER TROUBLE CALLS

Evans vaporizing burners are efficient and quiet ... no moving parts ... no mechanical troubles ... no service problems.

4 for 84 CUTS YOUR COSTS AND THE CUSTOMER'S COST

With Evans you sell the total low costs of oil-saving automatic heating. 1. Low first cost. 2. Low installation cost. 3. The lowest operating cost.

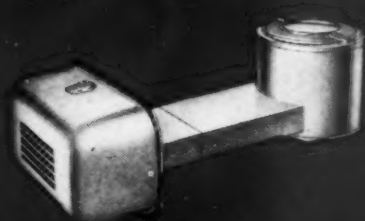
4 for 84 MEANS EFFICIENCY, FUEL SAVING DESIGN

The Evans line is specifically designed to provide small and medium size homes with low cost completely automatic heat.

EVANS
PRODUCTS CO.



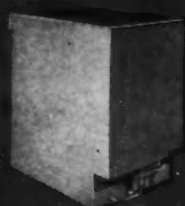
HEATING & APPLIANCE DIVISION • PLYMOUTH, MICHIGAN



MODEL 598

A new low cost burner for small homes.

A new conversion burner that makes possible low cost completely automatic heat. All gas operating cost small house owners can afford. Fits any type furnace. 100,000 B.T.U. output.



MODEL 458

A low cost automatic floor furnace that takes no room space at all.

This compact oil-fired furnace fits flush in the floor—no basement needed. It provides all the heating comfort you would expect from a full-sized basement installation. 65,000 B.T.U. output.



You can sell an EVANS automatic oil-burned WATER HEATER with every installation. May be installed anywhere—no gas or electricity needed. Provides more hot water at less cost than any other type of water heater. 45 gal., 30 gal., 20 gal. sizes.

THE LINE THAT'S ENGINEERED TO MEET SALES REQUIREMENTS

Ask yourself these important questions about your heating business

- Do you have to stock many different models to meet your customer's requirements? Does this high inventory cut into your profit?

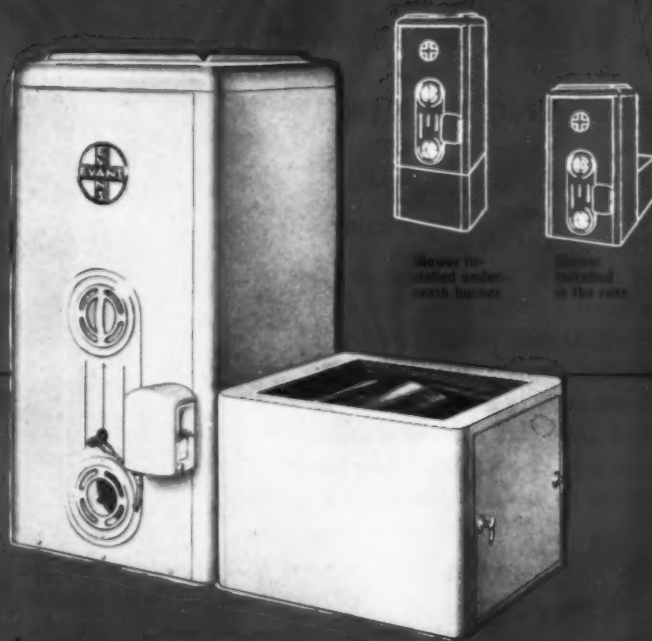
- Does the equipment you handle require complicated installation that cuts into your sales volume? Does it have to be wired and assembled? Does it need difficult duct work?

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- Do you have a line designed to meet the needs of the small home owner . . . the market where real volume and profit lie? Are the models completely automatic? Are they engineered to produce plenty of heat at low cost?



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Blower installed under furnace

Blower installed in the room

MODEL 378

A space saving forced air furnace. A compact, fully automatic, factory wired and assembled unit, ready for installation in closet, basement or utility room. 52,500 B.T.U. output.



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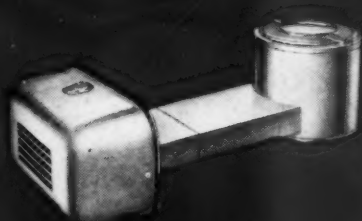
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EVANS
PRODUCTS CO.



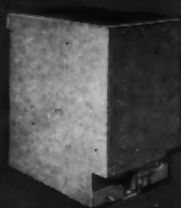
HEATING & APPLIANCE DIVISION • PLYMOUTH, MICHIGAN



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A new conversion burner that makes possible low cost completely automatic heat of 83 operating cost small home owners can afford. Fits any type furnace. 100,000 B.T.U. output.



MODEL 458

A low cost automatic floor furnace that takes no room space at all.

This compact oil-fired furnace fits flush in the floor—no basement needed. It provides all the heating comfort you would expect from a full-sized basement installation. 50,000 B.T.U. output.



You can sell an EVANS automatic oil-fired WATER HEATER with every installation. May be installed anywhere—no gas or electricity needed. Provides more hot water at less cost than any other type of water heater. 45 gal., 30 gal., 20 gal. sizes.

THE LINE THAT'S ENGINEERED TO MEET SALES REQUIREMENTS



Timely Tips on Stainless Steel Shop Practices

(No. 9 of a series)



SPOT WELDING

ENDURO Stainless Steel is well adapted to this method and requires less heat than the same gauge common steel. Area of the electrode points should be kept as near constant as possible. Spot welds which will be exposed to the atmosphere should be cleaned with acid or ground and polished.



GRINDING WELDS

Solid wheels give best results with ENDURO. Allow wheels to ride easily on the stainless steel surface so that cutting edges of individual grits may do their work at recommended speeds. Stop hard wheel grinding slightly above the finish level desired, so that final treatment for matching will not result in a groove along the bead.

BUFFING

Stainless steel is best buffed in two distinct steps: (1) a "cutting buff" levels tiny marks left by previous oiling-out operations, and (2) a "color buff" gives a mirror finish. For production buffing, a cloth and paper wheel gives good results. Buffing compounds with a wax-type binder and aluminum oxide abrasives have proved successful.



BENDING

Your bending and forming equipment, rated at a definite capacity for mild steel, can be used for ENDURO several gauges lighter. The tendency of stainless steel to spring back can be adjusted by bending the work to an angle slightly greater than that desired.



There's no secret to "cashing in" on the steady volume of business waiting for stainless steel fabricators. As these brief tips show, your present equipment and methods can easily be applied to this profitable field. For complete information on latest shop practices, write for your free copies of "THE FABRICATION OF REPUBLIC ENDURO STAINLESS STEEL" and "THE WELDING OF REPUBLIC ENDURO STAINLESS STEEL"—two books written especially for sheet metal workers.

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, N. Y.

...AND THE
BEST TIP



ALWAYS
USE ...

Republic
ENDURO STAINLESS STEEL



Other Republic Products include Black, Galvanized, Galvannealed and Electro Paintlok Sheets—Toncan Iron Sheets



FLUID HEAT scores again! This time it's a compact, new Warm Air Furnace that takes dead aim at the booming small home market! Fluid Heat Model RU-65 Warm Air Furnace is smaller than a home refrigerator. Yet it does a big heating job, giving up to 65,000 B.T.U. per hour. It's priced right and sized right for profitable volume sales to contractors building small homes in your territory!

Just like Fluid Heat's larger Winter Air Conditioners, this 5-foot-high unit gives you plenty of selling points! It's not a floor furnace . . . nor a single register job. It's a real forced air furnace . . . return air can be brought in at either side or up through the floor. There's the "Fuel Saver" Control which gets maximum heat from every drop of oil. Fan can be adjusted for intermittent or C.A.C. (Continuous Air Circulation) to eliminate air stratification and cold 70°. Model RU-65

is another example of why Fluid Heat's complete line . . . with models for every personal preference . . . makes a Fluid Heat Dealer Franchise the most valuable in the industry!

So write today for full information on a Fluid Heat Dealer Franchise. Find out how our wide-awake development laboratory keeps you ahead of competition. Discover how a sound, competitive price structure gives you more opportunities for sales . . . how husky, well-designed construction reduces your service problem. Write today to: **FLUID HEAT OIL BURNER DIVISION**, Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24, Maryland.

ATTENTION!

OIL BURNER DEALERS IN

- MADISON, WIS.
- BURLINGTON, VT.
- ATLANTA, GA.
- DUNKIRK, N. Y.

There is a valuable Fluid Heat Dealer Franchise open in your community! Take advantage of Fluid Heat's new models, new openings for sizable profits. Write today for details.

A FLUID HEAT Dealer Franchise is the Most Valuable in the Industry!

fluid heat

OIL BURNER

"WORLD'S ECONOMY CHAMPION"

Manufactured by Anchor Post Products, Inc.
Baltimore 24, Md., Established 1892



Boiler Burner Units, 3 Models from 475 to 840 sq. ft. of standing hot water.



Wall Flame Rotary Burners, 2 Models with firing rates from 1/2 to 4 1/2 gals. per hr.



Pressure Burners, 4 Models with firing rates from 7/10 to 12 gals. per hour.



Air-Conditioning Furnaces, 5 Models from 65,000 to 200,000 B.T.U. per hour.

NEW DUST STOP

MEMO
TO GOOD HUSBANDS WITH BAD MEMORIES



Another Heating Season is here... time to replace dirty filters!

Right now, before the cold weather arrives, is the time to get that modern warm-air furnace ready for winter. And how little it takes—often only the replacement of its dirt-logged air filters. Day in and day out, all through the heating season, the filters remove dust and lint from the circulating air—a roomful of air every few minutes! Is it any wonder filters become clogged and need replacing at least once a year?

By installing clean, new Dust-Stop® Filters—incidentally, standard equipment in practically all forced-warm-air furnaces—your heating plant can again breathe freely. It can again give you plenty of clean, drift-free heat. Can save you enough in fuel and cleaning bills to pay, many times over, the cost of the new filters.

Contact your dealer today and get a new set of Dust-Stop Filters! Your furnace repairman or hardware dealer can supply them (or consult your Classified Telephone Directory under "Filters—Air"). Owens-Corning Fiberglas Corporation, Dept. 2100, Toledo 1, Ohio.

In Canada: Fiberglas Canada Ltd., Toronto, Ontario.

DUST STOP AIR FILTERS
Fiberglas product



Don't let this ad and the convenience of DUST STOP's expert





Free Dealer Helps

MAKE IT EASIER FOR YOU TO GET

- DISPLAY
- WINDOW STREAMERS
- FOLDERS
- POST CARDS

CAMPAIGN

ON FURNACE FILTER REPLACEMENT

Reaches Millions..Sells for You!

Get set to Tie In with this Profit-Boosting Promotion

Again this fall, DUST-STOP National Advertising presells millions on replacing dirt-clogged furnace filters . . . reaches more than 6 million home-conscious families, readers of BETTER HOMES & GARDENS, AMERICAN HOME, HOUSE BEAUTIFUL, HOUSE & GARDEN. Bright, colorful ads remind folks of the fuel savings and added comfort made possible by changing the air filters in their forced warm-air furnace.

With more than 2½ million modern warm-air furnaces now in use, and new installations running half a million yearly, furnace filter replacement is big business, profitable

business . . . and it can be good business for you. What's more, your filter business can build *extra* profits for you. Every time you install new DUST-STOP Air Filters, you have an opportunity to check for additional service business which, otherwise, might pass on by.

Get ready now to make the most of this profit-boosting promotion. Order a full stock of DUST-STOP Air Filters and tie in by using the effective FREE display material and dealer advertising helps. Contact your DUST-STOP distributor or jobber today. Owens-Corning Fiberglas Corporation, Dept. 930, Toledo 1, Ohio.

In Canada: Fiberglas Canada Ltd., Toronto, Ontario.



YOUR SHARE OF THIS PROFITABLE BUSINESS!

AD MATS

BOOKNOSE
HANGERS

RADIO SCRIPTS

BLOWER
LABELS

FILTER
SIZE CATALOG

It's the **CONSUMER** *Who keeps you in* **BUSINESS**

The furnace dealer must handle the line that will meet best the consumer's requirements — and he looks to you, the jobber to supply such a line.

As a jobber you sell to the dealer but in the final analysis it's the consumer who decides what lines you should handle.

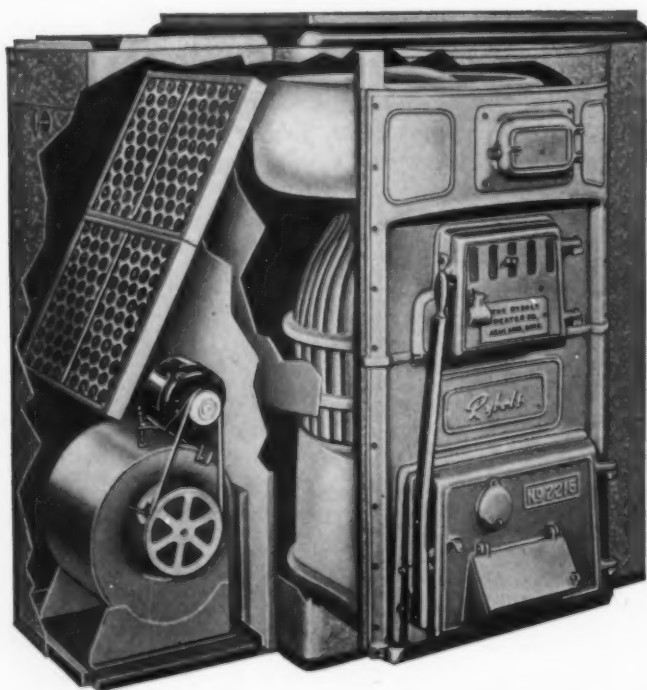
In buying a heating unit the consumer considers not so much how it is manufactured as what it will do for him — what it will give him and his family in comfort, convenience, dependability and fuel economy.

For over 35 years the Rybolt line has been

the choice of the consumer who appreciates real value because it gives him most for his heating dollar. Its reputation for enduring quality is based on sound practical engineering and honest standards of workmanship material.

There are heating units that may sell for a little less — there are some that have a wider sale—but there are none that dollar for dollar, give the consumer more lasting service and satisfaction, than Rybolt. And in the long run this means more stable business and bigger profits for both you and your dealers.

Rybolt **CAST-IRON WINTER AIR CONDITIONER • Series 152 • Coal Fired** **EASILY CONVERTED TO GAS OR OIL**



This Rybolt Winter Air Conditioner is thoroughly modern, smartly styled and moderately priced. It embodies many important advanced features which assure the utmost in comfort, convenience and trouble-free heating service, which means clean, properly humidified, evenly controlled heat. For its heating element has the well known Series 15 cast-iron, coal-fired furnace. The full height blower cabinet can be placed at either side for convenience in installation.

To meet any fuel emergency this unit can be easily converted to firing with gas or oil with little or no loss in heating efficiency. With a few simple changes it can also be readily adapted for stoker firing.



THE RYBOLT HEATER COMPANY
615 MILLER STREET ★ ASHLAND, OHIO

*Fuel saving is "HOT"
and with*

HUMIDIFICATION

it's warm too

● Right now—with a memory of a tough winter and harrowing fuel shortages fresh in mind, millions of people are ripe for a proposition which will save fuel without discomfort. Fuel saving is "hot." They will be glad to pay a reasonable price to get it.

Sell the warm air furnace owners Skuttle Humidifiers, which keep the air moist—more comfortable at lower thermostat setting. Skuttle Humidifiers make fuel saving warm, too.

Substantial Fuel Saving

Oil companies say for each degree thermostat setting is lowered, an average of 3% fuel is saved. With Skuttle Humidification, temperature can be 3° or 4° lower with comfort—providing a substantial economy.

Good Profit in Off Season

Easy to sell—easy to install—Skuttle Humidifiers are fine for off-season profits—there is additional profit in regular replacement of evaporator plates.



*sell it
at a profit*

**WITH
SKUTTLE
HUMIDIFIERS**

Highest Quality—Self-Cleaning

The self-flushing, self-cleaning feature of Skuttle Series 600 is a sales winner. Lift the lever, and it automatically flushes out the lime, dust and sludge.

Pan is seamless copper—evaporating plates are Vapoglas*—all glass fiber which absorb 70% more water per pound than ceramics, assuring maximum humidification.

*Patents pending

Write for our sales proposition

Skuttle

**MANUFACTURING COMPANY
4099 BEAUFAIT • DETROIT 7, MICH.**

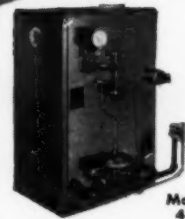
FOR WIDEST *selection*

RADIATION HEATING

Choose the boiler for your domestic, commercial or industrial radiation heating job from the *thirty-six* basic sizes in the Bryant line. Rated from 67,500 to 3,966,000 Btu per hour, Bryant Boilers are available in hot water, vapor and steam types . . . a size and type for any radiation heating application.



Model 630



Model 443

WINTER AIR CONDITIONING

These Bryant Winter Air Conditioning Units provide the design and operation features that you want for single or multiple installations. Made in conventional basement model with cast iron heat exchanger, and vertical types with either cast iron or Henigge steel heat exchangers. 17 different sizes; inputs 45,000 to 250,000 Btu per hour.

Model BA-88



Model VB



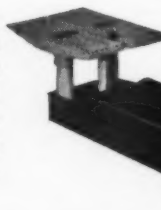
Model VS-304



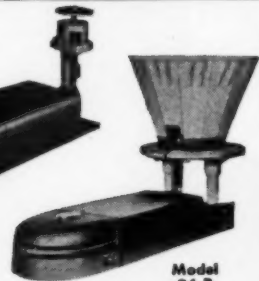
CONVERSION BURNERS

Old-fashioned furnaces become modern, fully-automatic gas heating plants with Bryant Conversion Burners. Bryant provides three types in two basic models: round burner and baffles for conventional round furnaces, rectangular burner for rectangular boilers and furnaces, and a single-port, spread-flame budget model for special applications. Ten sizes.

Model 94-S



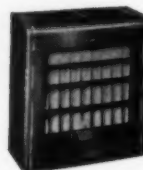
Model 97



Model 94-R

SPACE HEATERS

Heat a single room . . . cabin, office, study, laundry . . . or a complete home with these Bryant Space Heaters. They provide welcome warmth by both radiation and circulation, require less floor space than the ordinary radiator, eliminate the hazards of old-style, open-flame heaters. Seven different sizes, inputs 15,000 to 60,000 Btu per hour, manual or automatic control.



Model VC-426



Model WV-401

FLOOR FURNACES

Bryant Floor Furnaces are engineered for ease of installation and operation. They are designed to fit between standard floor joists, provide floor level access to ignition and temperature control. They feature Bryant electric *Dial-Lite* ignition, are made in three sizes for automatic or manual control with inputs from 25,000 to 45,000 Btu per hour.

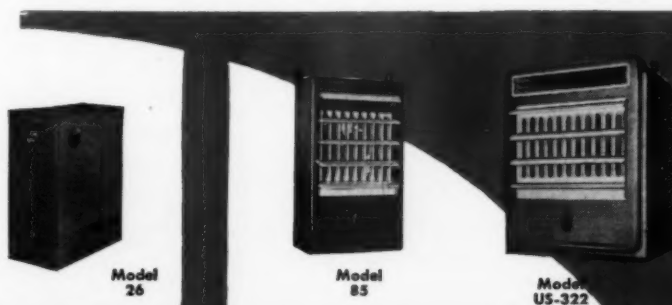


Model FF-361



All Bryant products are approved by the American Gas Association for safe, efficient, unattended operation in enclosed spaces.

IT'S BRYANT... ALL ALONG THE LINE!



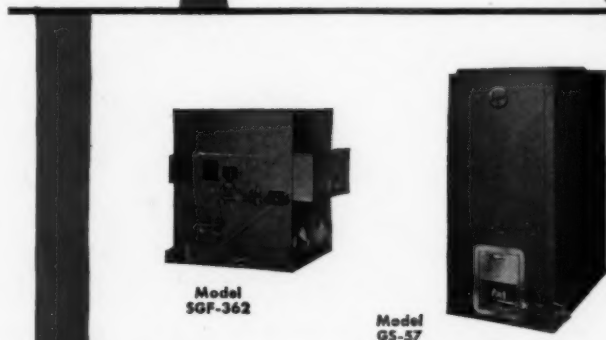
Model 26

Model 85

Model US-322

UNIT HEATERS

Bryant Unit Heaters complement the smart interiors of modern stores and offices, adapt themselves readily to factories and warehouses and in other commercial or industrial establishments. Model 85, in five sizes from 65,000 to 255,000 Btu per hour, has tubular steel heating sections; Model US-322, six sizes with inputs from 60,000 to 210,000 Btu per hour, features the *Heritage* steel heat exchanger.

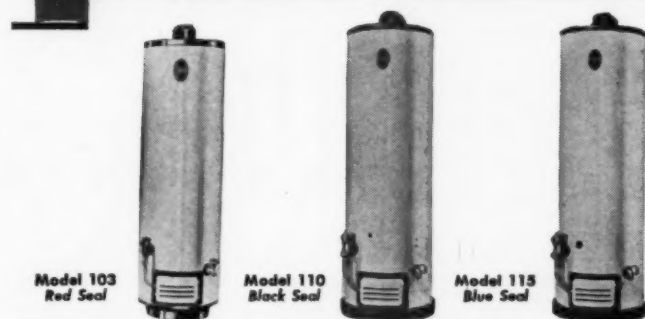


Model SGP-362

Model GS-57

WARM-AIR HEATING

These Bryant Gravity Warm-air Furnaces are built for budget homes. They include a standard basement model for replacement of old, worn-out furnaces in existing housing or for new, low-cost housing; plus the splendid new Bryant Suspended Gravity Furnace with smooth-running propeller-type fan for use as a central core in small homes. Model GS-57 is made in four sizes, inputs from 70,000 to 140,000 Btu; Model SGP-362 in 55,000 and 70,000 Btu inputs.



Model 103 Red Seal

Model 110 Black Seal

Model 115 Blue Seal

WATER HEATERS

Here's the automatic storage water heater line that is taking the country by storm... the Bryant *Red Seal*, a standard economy model; the Bryant *Black Seal*, a superior water heater with five exclusive features; and the *Blue Seal*, with the Bryant *Protect-O-Rod*—the water heater that is built to grow old, backed by a 10-year protection plan. Bryant Water Heaters offer special bargains for each type of gas, are made in 20, 30, 40, 50 gallon sizes.

The most complete line of gas heating equipment in the nation...at your service!

Unit for unit, the complete Bryant line of automatic gas heating equipment covers every phase of radiation, convection and conduction heating. It is backed by powerful national advertising, by a great array of tested sales aids supported by extensive sales and service training activity and a nationwide distribution and parts service organization set up for easy access by dealer and customer. And it's yours to tie onto... for bigger sales, more trouble-free installations and a host of satisfied customers. Let the Bryant distributor in your territory tell you how... now!



9 FACTORS

THAT
ADD
UP
TO

- 1 ONE-PIECE MARGIN • • No mitred corners • • neat and trim.
- 2 COMPRESSED MESH • • The entire fretwork is squeezed together under tremendous pressure, resulting in greater strength.
- 3 EACH AND EVERY MESH MEMBER IS FIRMLY LOCKED INTO THE MARGIN.
- 4 NEW MULTI-SHUTTER VALVE RUNNING SHORT WAY OF THE REGISTER • • "Smooth as silk" in operation • • Closes tightly.
- 5 EASILY REMOVABLE FACE • • Just four screws to remove.
- 6 CLOSE MESH • • Heel-proof • • Duct concealing.
- 7 AMPLE FREE AREA • • Over 75% (Average).
- 8 ADEQUATE CLEARANCE FOR QUICK AND EASY INSTALLATION IN STANDARD OPENING OR FLOOR BOX.
- 9 BAKED-ON FINISH OF LONG-WEARING, SUPERIOR QUALITY.



SECTIONAL REAR
VIEW OF FACE



Inspect it
at your H&C
Jobbers'

The Finest of Floor REGISTERS



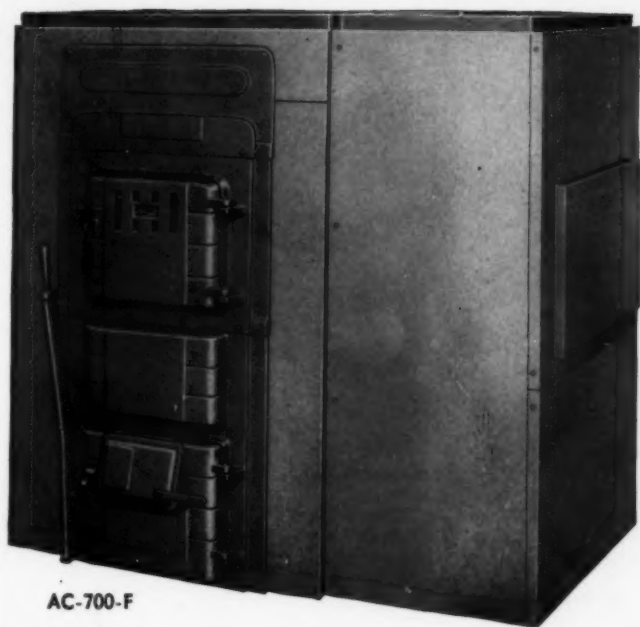
The New
H & C
No. 210

HART & COOLEY MANUFACTURING CO., Holland, Mich.

World's Largest Manufacturers of Registers, Grilles and Furnace Accessories
In Canada: Hart & Cooley, Inc., Ltd., Fort Erie, N. Ontario



When Customers Want **3** Choices
 It's *Luxaire's* **3 in 1**
ALL FUELS
AIR CONDITIONING UNIT



AC-700-F

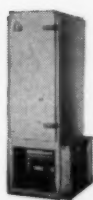
● When the job is "up-in-the-air" due to the uncertainty of which fuel will be more readily obtainable—you get all 3 choices with Luxaire's 3-in-1 All Fuels Air Conditioning Unit.

Because—the design and construction of this unit makes it easily converted and well adapted for any fuel—oil, gas, or coal.

You have automatic, submerged arc welded seams—large heating surfaces—long fire travel—all essential and necessary for the successful burning of gas, oil or coal.



Series G
Gas-Fired, Steel
Gravity
Furnace



Series H
Gas-Fired, Utility
Steel Air
Conditioning Unit



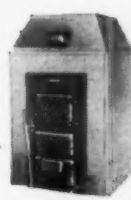
Series CA
Gas-Fired, Cast
Iron Air
Conditioning Unit



Series O
Oil-Fired, Steel
Air Conditioning
Unit



Series VH
Oil-Fired, Steel
Utility Air Con-
ditioning Unit



Series 700
Coal-Fired, Steel
Gravity
Furnace



Series C
Coal-Fired, Cast
Gravity
Furnace

THE C.A. OLSEN MANUFACTURING COMPANY

Luxaire



HEATING & AIR CONDITIONING UNITS

ELYRIA 12, OHIO

Now-

Draft-O-Stat

BAROMETRIC DRAFT CONTROL
MODEL "B" — ALL STEEL CONSTRUCTION

IS AVAILABLE FOR
ALL FLUE SIZES
FROM 6" TO 12"!

Draft-O-Stat—for many years the standard barometric draft-control mechanism for boilers, furnaces, oil burners and stokers—is now available in the MODEL "B" for 6", 7", 8", 9", 10" and 12" flue-pipe sizes. Now you can replace all obsolete and inefficient draft controls with the newest development in precision combustion control for the small and medium-size heating plant—achieving a higher fuel economy than has heretofore been possible.



BAROMETRIC DRAFT CONTROL AT ITS BEST!

The MODEL "B" is the logical first choice of heating engineers, and many manufacturers specify it for use on their equipment. Welded steel construction, die stamped, and finished in red and black baked enamel with polished fittings, it is built for rugged, dependable service. It insures a steady, unchanging rate of draft or "vacuum" in the chimney—thus providing maximum utilization of furnace heat. It is quickly and easily installed, easily adjusted to any degree of sensitivity, and gives long-lasting, trouble-free service.

Features for Better Performance

- Exceptionally large Effective Area
- Precision Adjustment
- Feather-light Sensitivity
- Self-Cleaning Rocker Bearings
- Maximum Flexibility

Insist on Draft-O-Stat for best results on every heating installation.

*There's only ONE
Draft-O-Stat
and HOTSTREAM makes it!*

The HOTSTREAM Heater Co.
4935 QUINCY AVENUE • CLEVELAND 4, OHIO

Manufacturers of a complete line of gas-fired, electric, oil-burning and bottled-gas water heaters and draft controls

WIN \$100.00

NAME THIS VIKING BLOWER-PACKAGE



Isn't it a breath-taking beauty? Here is the most sensational, eye-compelling design in the heating field. Look it over closely and you'll agree it packs more sales power, bigger dollar value, greater customer acclaim than any blower package you've ever seen. It's as quiet as a soft whisper, and it's built to an operating standard of performance never known before in the forced warm air circulating field. Alert, sales-minded dealers will be the first in their territories to get a bigger profit by installing this new "Viking." Order from your jobber today. If he doesn't have any in stock yet, wire us collect and we'll tell you where to get them. Do it now.

CONTEST RULES

Viking offers \$100.00 for a name packed with sales punch for this new blower package. Competition will be limited to bonafide dealers and jobbers in the heating field, together with their employees. In case of similar names, duplicate prizes will be awarded. Contest closes midnight, September 30, 1948. Submit as many names as you wish. It costs you nothing, not even a box top.



AIR CONDITIONING CORPORATION
5600 WALWORTH AVE. • CLEVELAND 2, OHIO

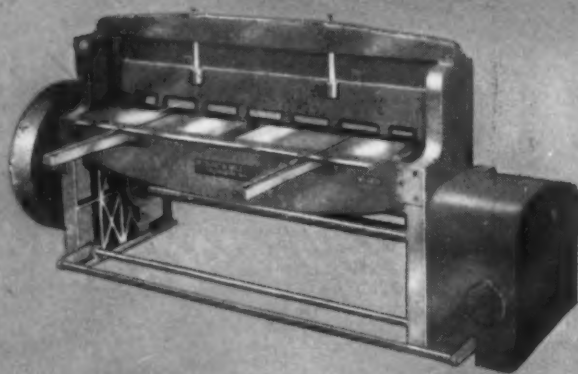
This is the name I would suggest for the new Viking Blower-Package.

Suggested Name _____

Submitted by _____

Address _____

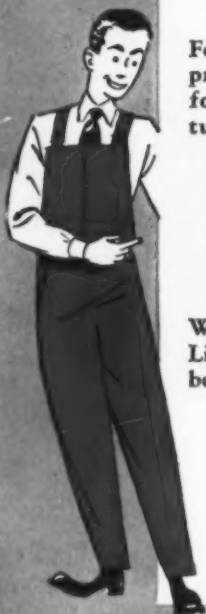
City _____ State _____



POWER SQUARING SHEARS

in 8 Foot, 10 and 12 Gauge, 6 Foot, 10, 12 and 14 Gauge, and 52 inch 12 Gauge capacities.

Wysong and Miles Sheet Metal Machines are *Economical and Productive*



For time-saving precision features that assure quality work and more production, specify *Wysong and Miles Sheet Metal Machinery*. Finely engineered for long and dependable performance . . . more and more shops everywhere are turning to *Wysong and Miles* for sheet metal shearing and bending equipment.

A precision ball-bearing parallel back gauge, adjustable to .0078 (1/128th) of an inch is available for all POWER SQUARING SHEARS. The larger Power Shears have a non-repeat unit that can be set to stop shearing action after each cycle; a jaw-type clutch so simple in operation that it requires only periodic lubrication; and a compensating holddown with an individual spring actuated plunger in each foot. . . FOOT-OPERATED SQUARING SHEARS, BENDING ROLLS either hand or motor operated, and ROTARY COMBINATION MACHINES are among other fine *Wysong and Miles* products.

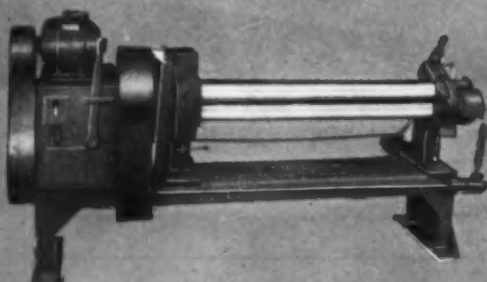
Write now for full information on the complete *Wysong and Miles Sheet Metal Line*. Remember . . . *Wysong and Miles Sheet Metal Machines* are economical in both initial investment and continued operation.

WYSONG and MILES CO

625 FULTON STREET, GREENSBORO, NORTH CAROLINA

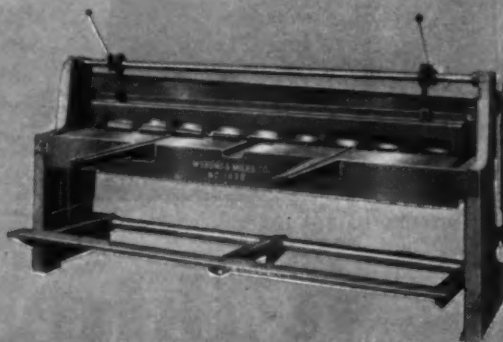
ROTARY COMBINATION MACHINE

with special attachments for
Rotary Shearing, Beading, Crimping,
Wiring, Elbow-edging, Slitting,
Flanging, etc.



BENDING ROLLS,

motorized in 48, 60 and 72 inch widths;
hand operated in 36, 42 and 48 inch widths.

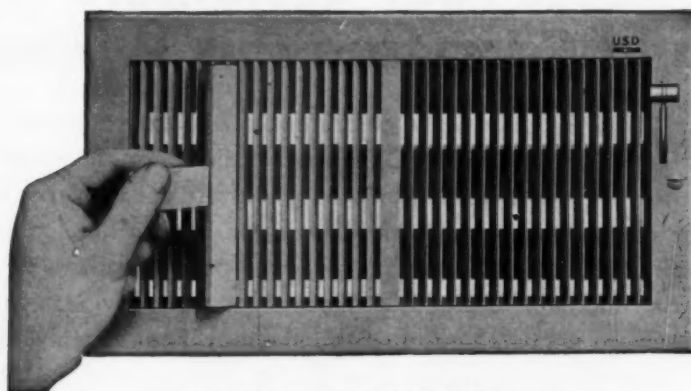


FOOT-OPERATED SQUARING SHEARS

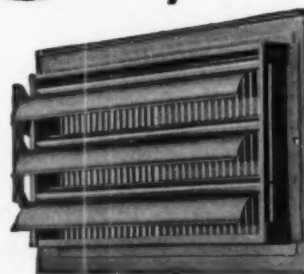
from 36 inches to 8 feet in width.

Auer 4-WAY **AIRO-FLEX** "4400" Series Registers

*Adjustable for
Right or Left
-also Up or Down
Directional
Flow*



No. 4432 Airo-Flex Adjustable Register



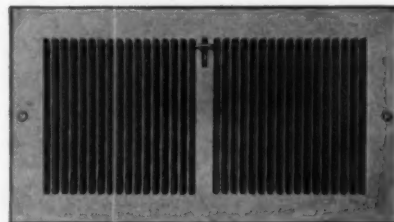
Back view of Airo-Flex
No. 4432 Register



The Auer Airo-Flex "4400" Series gives you a really fine quality register, nicely made, smoothly operating, 4-way directional—yet very moderately priced. By keeping the entire design and the working mechanism as simple as possible, but sacrificing no essential, we have held the cost on this model to a figure which makes it very popular. This Airo-Flex has horizontal multi-louvre deflecting blades governing up-and-down flow. Indicator on face shows setting of these blades. Vertical fins on face are also easily adjusted to desired right or left angles, with turning tool.

In both appearance and efficiency, this is an outstanding value in a 4-way register and a product you can use with pride on *any* job. The same design face is also available in the "4000" line, with single valve, for right or left flow, as shown below.

No. 4032



Auer makes a complete line of high grade registers for all your gravity or air conditioning needs. Auer Register Book (or special Catalog "G" on flat stamped metal Grilles) mailed on request.

The Auer Register Company, 3608 Payne Avenue, Cleveland 14, Ohio

Auer **REGISTERS**
& GRILLES for AIR CONDITIONING & GRAVITY

A SURE-FIRE OIL-HEATING

KRESKY FLOOR FURNACE

Will Keep Your Customers
Warm and Care-free this Winter



THE SECRET of KRESKY'S low-cost, trouble-free operation is the famous patented KRESKY Oil Burner, basic unit in all models. It inducts air into the oil flame in just-right amounts by an electric blower to give fast, high-low clean heat in all climates and altitudes, regardless of draft conditions. That's why a precision engineered KRESKY Floor Furnace provides your customers with abundant, clean, healthy heat, evenly distributed along floors, into drafty corners, with less oil consumption. Your customers are freed from daily attention, and you from costly service calls.

Now's the time to replace old-fashioned space heaters with KRESKY FLOOR FURNACES

Get your "replacement" story — now — to people with bulky and unsightly space heaters, and beat competition by a month or two. For those who install the Kresky Floor Furnace, it means more "living" space, cleaner, faster heat at less cost. And for you, more profits. Feature the All-Year-Round KRESKY line.

If interested in a dealership, write

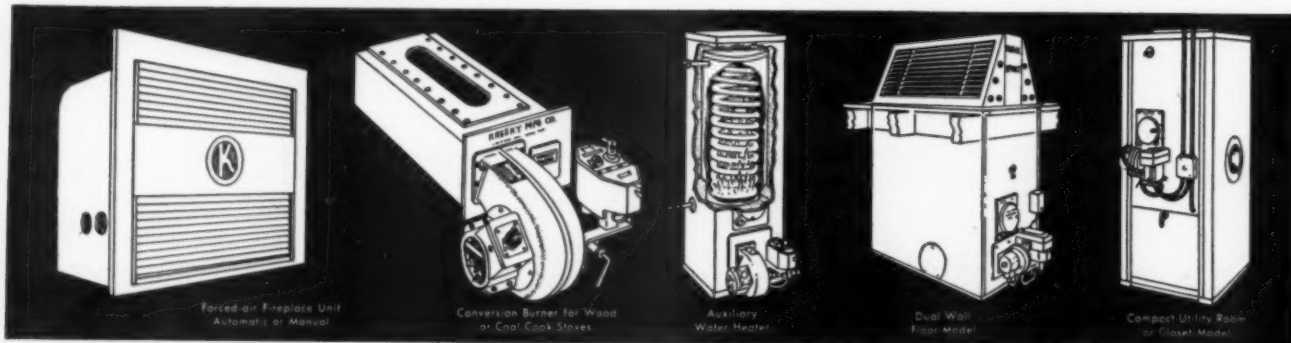
KRESKY MFG. CO., INC.

320 H STREET

PETALUMA, CALIFORNIA

The Best Known Name in Oil Heating Since 1910

Listed by Underwriters' Laboratories, Inc.



Forced-air Fireplace Unit
Automatic or Manual

Conversion Burner for Wood
or Coal Cook Stoves

Auxiliary
Water Heater

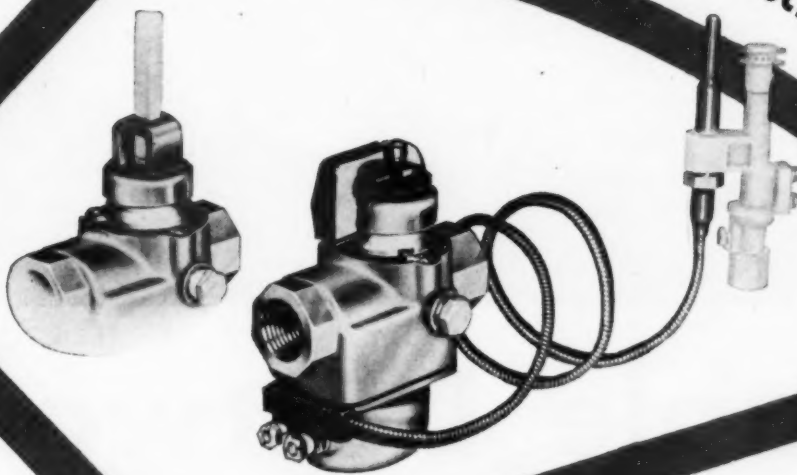
Dual Wall
Floor Model

Compact Utility Room
or Closet Model

GENERAL CONTROLS

Gas Cock Safety

ROTARY RESET LIGHTING WITH GAS COCK IN "OFF" POSITION



NEW **MR-2-5**

GAS COCK SAFETY VALVE

All-in-one. Combining automatic 100% safety shut-off with manual control valves for main burner and pilot.

One Handle controls main burner valve, pilot valve and manual safety reset. Handles for close or remote operation available.

Reduced cost of installation with only one valve and one handle. For space and unit heaters, central and floor furnaces using natural, manufactured, mixed or liquefied petroleum gases.

Either single couple or Pilot Generator operated models available.

For complete specifications request new Brochure SDL 2R-4



GENERAL CONTROLS

Manufacturers of Automatic Pressure, Temperature & Flow Controls

FACTORY BRANCHES: Birmingham (3), Boston (16), Chicago (5), Cleveland (15), Dallas (2), Denver (10), Detroit (8), Glendale (1), Houston (2), Kansas City (2), New York (17), Philadelphia (40), Pittsburgh (22), San Francisco (7), Seattle (1) • **DISTRIBUTORS IN PRINCIPAL CITIES**

49-1

A SURE-FIRE OIL-HEATING

KRESKY FLOOR FURNACE

Will Keep Your Customers
Warm and Care-free this Winter



THE SECRET of KRESKY'S low-cost, trouble-free operation is the famous patented KRESKY Oil Burner, basic unit in all models. It inducts air into the oil flame in just-right amounts by an electric blower to give fast, high-low clean heat in all climates and altitudes, regardless of draft conditions. That's why a precision engineered KRESKY Floor Furnace provides your customers with abundant, clean, healthy heat, evenly distributed along floors, into drafty corners, with less oil consumption. Your customers are freed from daily attention, and you from costly service calls.

Now's the time to replace old-fashioned space heaters with KRESKY FLOOR FURNACES

Get your "replacement" story — now — to people with bulky and unsightly space heaters, and beat competition by a month or two. For those who install the Kresky Floor Furnace, it means more "living" space, cleaner, faster heat at less cost. And for you, more profits. Feature the All-Year-Round KRESKY line.

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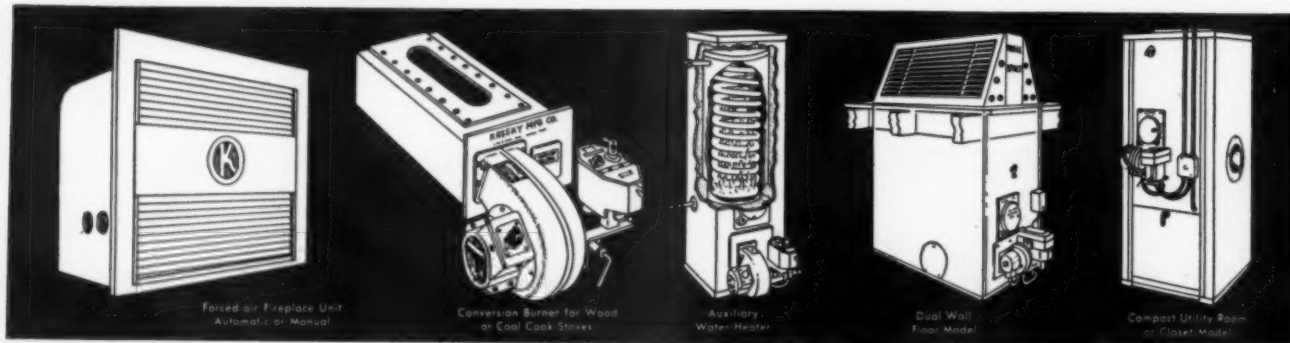
KRESKY MFG. CO., INC.

320 H STREET

PETALUMA, CALIFORNIA

The Best Known Name in Oil Heating Since 1910

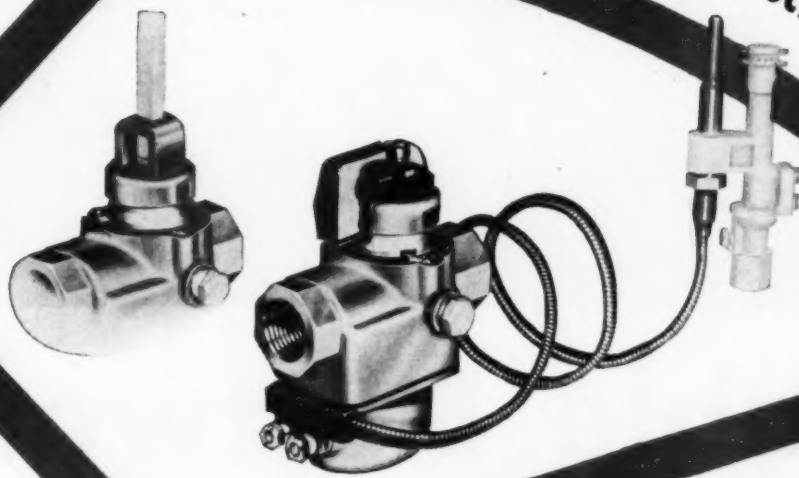
Listed by Underwriters' Laboratories, Inc.



GENERAL CONTROLS

Gas Cock Safety

ROTARY RESET LIGHTING WITH GAS COCK IN "OFF" POSITION



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GAS COCK SAFETY VALVE

All-in-one. Combining automatic 100% safety shut-off with manual control valves for main burner and pilot.

One Handle controls main burner valve, pilot valve and manual safety reset. Handles for close or remote operation available.

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49-1



Durable Ductwork for industrial air-conditioning

A textile factory, a chemical plant and a printing establishment all present different air-conditioning problems from the engineering standpoint. But they all require rugged ductwork that will give maximum service under corrosive conditions.

Beth-Cu-Loy Galvanized Steel Sheets have the properties needed for this type of service.

First, they have the strength, rigidity and fatigue-resistance found only in steel. Second, they have high corrosion-resistance due to

their copper content and their coating of Prime Western zinc. And as far as their cost is concerned Beth-Cu-Loy Galvanized Sheets are priced at little more than ordinary galvanized steel sheets.


Consider these points of superiority in Beth-Cu-Loy. They give greater customer satisfaction and help create the goodwill that builds business for the future.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation*

Beth-Cu-Loy Galvanized Sheets





*From head...
to Toe*

new

**incorporating time-proven
principles of design and
engineering with time-tested
construction refinements**

From
head

new

to toe

THE NEW

Janitrol

In announcing the new, improved Series FEC Winter Air Conditioners, Janitrol again steps far ahead of the field.

Many new products sacrifice easy accessibility for servicing to gain better appearance. Janitrol is different . . . *Serviceability and appearance* are both improved in the new models.

Note in the cut-away unit shown below how compactly the controls, burners and other components are assembled, yet each is easy to reach.

Note too, the new modern styling made possible by the new Twin Air-flow Ventilating Circulators.

This functional design assures a positive directional flow of air to keep the controls cool regardless of the compactness of the installation.

New PRACTICAL DESIGN FEATURES...FOR IMPROVED PERFORMANCE..

1 New Improved, Long-Life, Cast-Iron Heat Exchanger • Design improved to provide easier removal of both the top plate flue gas collector and the new type, interior suspended alloy steel turbulators.

2 Twin Air-Flow Ventilating Louvres • Admit a direct flow of ventilating air to assure the cool operation of all controls, regardless of the compactness of the installation.

3 New Type Ribbon Burners • New design, features a quickly removable, steel burner chassis. The individual runner ribbons and the burner ribbons are nested in an open top holder which may be quickly and easily removed as a complete unit. Each burner has its own non-linting primary air shutter adjustment.

4 New, Plug-in, Self-Positioning Electrically Operated Pilot • Complete pilot assembly can be quickly removed or replaced in a matter of seconds. Plugs into regular type electrical outlet. New actuating lever and switch design assure long-life positive operation.

5 Combination Fan and Limit Control • Switch mechanism and thermal element are placed in the most convenient and accessible location. Improved factory-set positive positioning to prevent damage during installation work.

6 Standard Dimensions, All Parts and Controls Completely Enclosed • All six sizes are a standard 26" in depth, and 60" high, only the width changes. All units are crated, easily moved through standard size door. No separate housings or extended controls to be figured for roughing-in dimensions.

All models from size 60 to 120 are completely assembled at the factory. Speeds up and improves installations.



Janitrol ... THE LINE THAT IS EASIER TO SELL.

WINTER AIR CONDITIONER...first again to meet the changing requirements of today's and tomorrow's modern ideas of housing and improved comfort.

The new Janitrol FEC is *clean* to look at...*clean* to work with...there's no extension of controls outside the casing, no extraneous housing for filters or other component parts. Everything is enclosed in the smart, gleaming, streamlined, grey baked enamel cabinet.

Janitrol dealers will soon receive the full details on the big merchandising and advertising campaign that will announce Janitrol's newest advance in gas heating. Write today for further information on how to "line-up" with Janitrol, the line that's *UP* in design features and design style.

"C.A.C"

Now, Janitrol dealers can offer even greater indoor winter comfort with Janitrol FEC Conditioners factory adjusted for C-A-C operation. (Continuous Air Circulation)

Continuous Air Circulation with its floor-to-ceiling warmth is fast finding favor...it's a feature that's easily understood and appreciated by the average home-owner.

Janitrol's unique design combination of a Ribbon-Type burner located directly at the base of each cast-iron Heat Exchanger tube, is ideally suited for C-A-C operation.

This exclusive Janitrol design provides one of the most practical means of utilizing C-A-C to its best advantage.

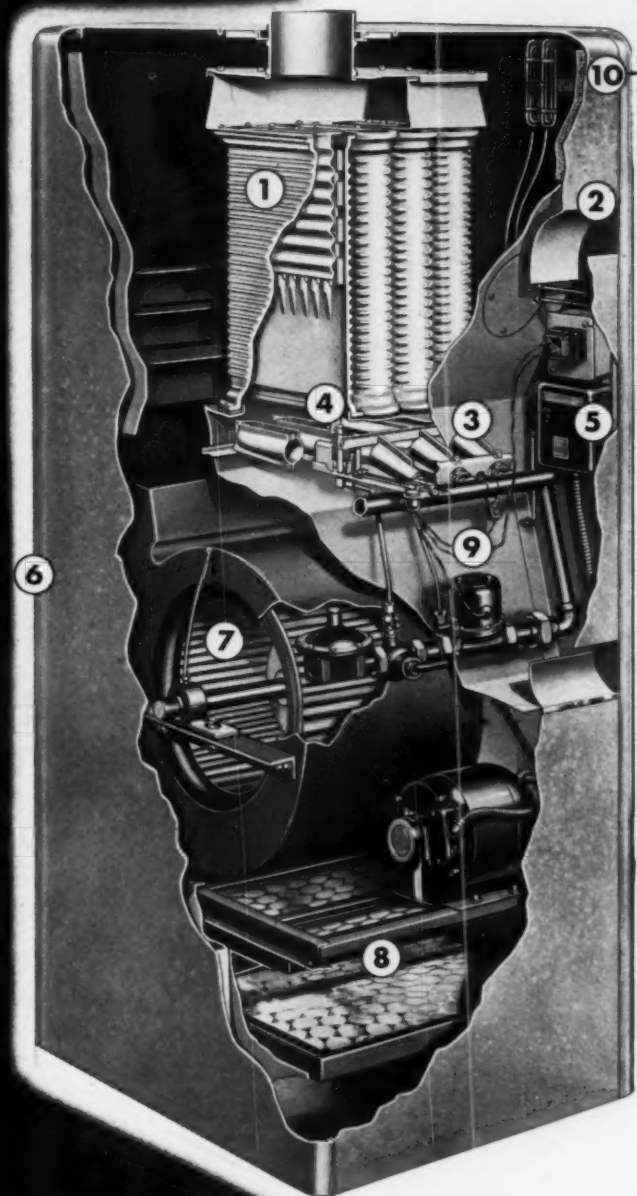
CE... FOR EASIER SERVICING...

7 Large Capacity Blowers • Rubber cushioned blower chassis support cradles the blower, absorbs all vibration, results in quiet operation. Blower can be factory adjusted for C-A-C operation.

8 Over-size Filters • Double filter suspension provides more than adequate filter area to assure clean circulated air at standard or lower air volume.

9 Accessible Control Assembly • All units of the control and burner assembly are compact. Can be inspected and serviced by removing upper front cabinet panel.

10 Duct Mounted Thermo-drip Humidifier • Humidifier is shipped separately. It may be conveniently located in the supply duct near the Conditioner after it is installed.



ELL. THAN TO SELL AGAINST!

THE NEW *Janitrol* WINTER AIR CONDITIONER is part of the Complete Janitrol Line of Time-Proven Equipment for Domestic, Commercial and Industrial Heating

Here's the complete Janitrol line that today represents more than 30

years' pioneering in the development of better gas heating equipment. Over the years, Janitrol equipment has proven its ability to stand up and deliver solid heating satisfaction year after year. This background has built for Surface Combustion and Janitrol products an enviable reputation for high standards of quality, from coast to coast.

With Janitrol . . . the home owner has gained great improvements in gas-heating comfort and automatic operating economy.

With Janitrol . . . the builder has been able to offer more saleable homes because of more compact, completely automatic modern heating.

With Janitrol . . . the heating contractor and dealer have directly profited from well designed, soundly constructed equipment, engineered for both practical installation and a minimum of servicing.

That's the Janitrol story . . . a story of constant improvement in the design, construction, appearance and sales appeal of America's most modern line of gas heating equipment.

Janitrol is a consistent heating advertiser. Special campaigns are running regularly addressed to consumers, architects, builders, industry, and wholesale-retail business men.

This all means that there's a ready acceptance for Janitrol. Briefly, "Janitrol is Easier to Sell, then sell against." Get ready for keener competition, get set with Janitrol. Write today.



The Laboratories Approval Seal
All Janitrol Equipment is AGA
Approved under most recent
requirements.

DRAVO
Counterflo
HEATERS
AVAILABLE
IMMEDIATELY!



NOW—Dravo *Counterflo* Heaters can be shipped promptly from stock.

AND—Immediate availability means that you can take advantage of the summer air-circulating feature right now. You simply flick the selector switch and the large fans instantly go to work to help maintain comfortable working conditions for employees. Even more important, you'll be prepared in advance for next heating season.

NOW—The Dravo *Counterflo* Heater is listed by Underwriters' Laboratories and ap-

proved by the American Gas Association.

In thousands of industrial and commercial establishments you'll find Dravo *Counterflo* Heaters establishing records for efficiency and economy. They'll prove their worth to you, too, and they can be

SHIPPED IMMEDIATELY FROM STOCK
for Winter Heating and Summer Ventilating.

For quick action call the Dravo Representative listed under "HEATERS" in your classified telephone directory, or contact Heating Section, Dravo Corporation, Pittsburgh 22, Pennsylvania.

Dravo also manufactures the DRAVO CRANE CAB COOLER for air conditioning hot-metal crane cabs.

DRAVO CORPORATION

PITTSBURGH • CLEVELAND • PHILADELPHIA • DETROIT • NEW YORK
CHICAGO • ATLANTA • BOSTON

Sales Representatives in Principal Cities • Mfd. and sold in Canada by Marine Industries, Ltd., Sorel, Quebec





The Alnor Velometer Jr., 4" x 3" x 1½"; available in single or double range scales; double-pivoted, double-jeweled movement for increased accuracy.

Announcing the New Alnor Velometer Jr.!

Here's the new Alnor Velometer Jr.—Illinois Testing Laboratories' most recent perfection in precision air velocity measurement instruments. A small, portable, completely self-contained unit, the new Velometer Jr., answers a long felt need for an accurate, instantaneous direct reading instrument that is low in cost.

Amazingly accurate . . . easy to read, this inexpensive Velometer gives direct reading of air velocity in feet per minute without bothersome timing, calculations or reference to tables and charts.

The new Velometer Jr., can be adapted to a score of uses when installing new work or maintaining efficient operation of established systems. Send for bulletin and prices!

Alnor

PRECISION INSTRUMENTS
FOR EVERY INDUSTRY

ILLINOIS TESTING LABORATORIES, INC.
Room 538, 420 N. La Salle Street, Chicago 10, Illinois

**SO MUCH EASIER
TO FABRICATE..**

**COSTS SO
LITTLE MORE...**



HUSSEY COPPER

The savings you make in faster, easier fabrication of Hussey Copper . . . its permanence and dependability which saves you "call backs" to completed jobs . . . its customer-satisfaction which builds new business for you . . . more than equalizes the slightly higher cost of the best in building metals . . . **HUSSEY COPPER.**

Check Hussey's full range of builders' copper and copper products—then get the Hussey habit! Warehouses in all principal cities to serve your every need.

HUSSEY COPPER BUILDING PRODUCTS

Copper Sheet • Copper Strip
Copper Rivets • Copper Nails
Copper Down Spouts
Copper Eave Troughs
Copper Conductor Pipe
Copper Ridge Roll
Other fabricated Copper
Products

C. G. HUSSEY & CO.

(Division of Copper Range Co.)

Rolling Mills and General Offices: **PITTSBURGH, PA.**

Hussey Warehouses Carry Stocks of Copper and Brass Products for Prompt Delivery



FOR

JOB ✓

FOR

FUEL ✓



AC-700-F

MONCRIEF

Years Ahead ALL FUELS
Air Conditioning Unit

✓ For any job, large or small there's a Moncrief unit that fits the job.

✓✓✓ For any kind of fuel—coal, gas, or oil. Primarily built to burn coal—the large heating surfaces—long fire travel—and automatic, submerged arc welded seams make this unit easily converted and well adapted for gas or oil firing.



Series C
Coal-Fired, Cast
Gravity Furnace



Series 700
Coal-Fired, Steel
Gravity Furnace



Series VU
Oil Fired, Steel
Utility Air
Conditioning Unit



Series P
Oil Fired, Steel
Air Conditioning
Unit



Series CL
Gas-Fired, Cast
Iron Air Con-
ditioning Unit



Series U
Gas-Fired, Steel
Utility Air Con-
ditioning Unit



Series W
Gas-Fired, Steel
Gravity Furnace

THE HENRY FURNACE COMPANY

Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

MONCRIEF

FURNACE PIPE AND FITTINGS

YOU CAN SELL OIL BURNERS NOW!

WITH THIS **AMAZING
DEMONSTRATION**

**...MADE RIGHT
IN YOUR OWN
SHOW ROOM!**



Are you stuck with a top-heavy stock of conventional burners? Forget 'em—here's the burner you can sell now—TODAY! It's the Winkler LP*—a low pressure burner so sensational in performance you have to see it to believe it!

The Winkler LP* Demonstrating Unit enables you to prove—right in your own show room—that this burner slashes fuel consumption—ends service headaches and expense.

Before your prospect's eyes, the Winkler LP* Demonstrator burns—

1. Crankcase and transmission drainings
2. Mixed Oil and Water
3. "Hard-Cracked" Oil
4. Heavy, unrefined oil

... all without smoke or soot!

The Winkler LP* achieves its economy in four ways. It can be sized to burn as little as $\frac{1}{2}$ GPH—ending oversizing waste in the small heating plant. It saves service expense because of its utter simplicity and clog-proof nozzle. It ends inefficient short runs usual with oversized burners. It burns the lowest grades of fuel oil.

That's why the Winkler LP* will make up for your losses on slow-moving conventional burners. Don't delay in getting your share of the profits—write today!



**THE NEW
WINKLER**

***LP**

OIL BURNER

***LOW PRESSURE**



Exclusive Winkler Flame
Controller and Nozzle



Exclusive Winkler
Metering Unit

THE WINKLER Econo-Flame

A radically improved design in high pressure burners. Features the Deflecto-Air principle—producing correct oil—air pattern for complete combustion. This burner gives hi-pressure operation at its best.



WINKLER

Automatic Heating Equipment

U. S. MACHINE CORPORATION, Dept. AS-6 Lebanon, Indiana



TO THE JOB FASTER!

For "SHOP QUALITY" WELDING ON THE JOB



THE NEW WESTINGHOUSE

FLEXARC RANGER

ENGINE DRIVEN WELDER

... portable or skid-mounted



For construction and erection work, the new Flexarc Ranger is the answer for getting there fast . . . for getting welding jobs done better, faster and cheaper. It's a smaller, lighter, sturdy engine-driven welder for "shop quality" welds on field jobs where electric power isn't handy or available.

Easily towed at high speed, maneuverable over rougher terrain, it can be put to work in places formerly inaccessible with larger, heavier equipment.

Big welder performance at lower operating cost is provided over the same range of welding current as on similar ratings of heavy-duty industrial welders. Powered by a 4-cylinder Hercules industrial engine, it has a rating of 200 amps, 30 volts, 50% duty cycle, with a welding current range of 20 to 250 amperes.

Running gear is 2-wheel, spring-mounted, pneumatic-tired, standard road gauge. Unit is also available without running gear for stationary mounting.

For information on the Ranger and other Flexarc Welders, call your nearby Westinghouse office or write Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pennsylvania.

J-21468

Westinghouse Heavy-duty Engine-driven Welders . . .

These welders are built for hard, continuous service wherever electric power is not available. Single, preset current adjustment gives the exact welding current desired without drop-off. Available in 200, 300 and 400-ampere ratings, gasoline powered . . . 300-ampere, Diesel powered . . . supplied with either bed-plate or wheels.



Westinghouse FLEXARC

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

WELDERS AND ELECTRODES

"Installation Is Simplified And There Is Greater Accuracy In Operation With Penn Controls"

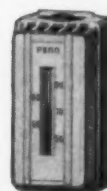


That's how L. A. Wilson, of the May Company, Moline, Illinois, states the advantages of PENN Controls. As Heating Manager of one of the most successful wholesale plumbing and heating suppliers in his part of the country, he's seen Penn controls give consistently dependable service in a wide range of conditions. That's why, for the past 10 years, he has recommended PENN heating controls to the trade.

Sturdy and accurate PENN heating controls will help your business, too. They eliminate "cold 70°" and make satisfied customers that send you more business instead of complaints. For information about PENN controls for all heating applications, ask your wholesaler today or write: **Penn Electric Switch Co., Goshen, Ind.** Export Division, E. 40th Street, New York 16, U. S. A. In Canada: Penn Controls, Ltd., Toronto, Ont.

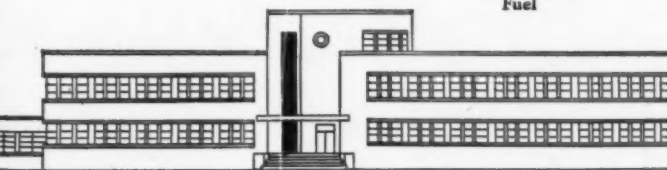


Penn Thermostat Clock Saves Fuel



Penn Thermostat Ends "Cold 70°"

Penn



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS



With Mueller Climatrol— Fuel Dollars *Go Farther*

Climatrol "budget-appeal" helps you sell

You sell *low fuel bills* when you sell Mueller Climatrol. And that's what home-owners want when they buy a furnace. *You* can give them full comfort value for every dollar they spend on fuel — for years to come. That's the story to tell, because that's the story that sells!

And you know it's true. You know that all Mueller Climatrol units are scientifically designed. You know the care with which they are built. That's why you can back the line you sell against any other — on any basis. Mueller gives your customers top comfort,

top appearance, top convenience, top service. And above all gives top fuel economy.

Sell that story to new-home builders. Sell it to home-owners who have a furnace that brings them "waste-high" fuel bills. Sell it to folks who want to heat with gas, or coal, or oil. You have the answer to any need, in the Mueller Climatrol line. And your story is backed by Mueller's 91-year record. That's why it pays to sell Mueller Climatrol. Write for latest literature. *L. J. Mueller Furnace Co., 2010 W. Oklahoma Ave., Milwaukee, Wis.*

M U E L L E R

Climatrol

REG. U. S. PAT. OFF.



Jobs like this are right down your alley if you're working with **U·S·S Stainless**

RESTAURANT EQUIPMENT of U.S.S. Stainless Steel is easy to make. Easy to sell, too, because it helps the restaurant make more money. People everywhere identify "stainless" with "cleanliness" ... and cleanliness attracts customers, whets their appetites.



A REMODELED building entrance. Note the pleasing simplicity which springs from the simple beauty of U.S.S. Stainless Steel sheets. In every city hundreds of buildings could use this inexpensive prescription for attracting new tenants and holding old ones.



SEE HOW this smart New York bakery is making a lot out of a small location with an inviting easy-to-fabricate front of U.S.S. Stainless Steel. Do you know any bakeries in your locality who could use a front like this? Just show them this photograph!



EVEN UNPRETENTIOUS homes are excellent prospects for drainboards, sideboards and sinks of U.S.S. Stainless Steel. Women like them because they never tarnish and are so easy to clean. Stainless steel is the only metal which is immune to all food corrosion, will never turn black!



• More Stainless Steel is being used today than ever before. Today it's easy to go out and get *extra profitable* jobs with U·S·S Stainless because people want and are willing to pay for what Stainless Steel has to offer.

Nearly every home is a prospect for a stainless kitchen. Hotels, restaurants, clubs, and hospitals everywhere are equipped with this modern, useful metal. Marquees, store fronts, display counters and building entrances are profitable applications for this permanently attractive construction. In factories and industrial plants, stainless steel applications are increasingly in demand. Why not build with U·S·S Stainless and cash in on this popular preference?

What's more, you can get U·S·S Stainless Steel

—in sheets of No. 2B and No. 4 finish; in bars that meet high standards of machinability; plates in a wide range of sizes; welded and seamless tubing; pipes, angles, channels, as well as welding electrodes in all standard grades and specifications.

To make sure of getting what you want quickly—phone, wire, or write one of the warehouses of United States Steel Supply Company. You'll find one in your city or not far away.



U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

8-741

UNITED STATES STEEL

AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY, Warehouse Distributors — Coast to coast: UNITED STATES STEEL EXPORT COMPANY, New York

OUTSTANDING



New Square Casing GRAVITY FURNACE

BRINGS FRESH PRESTIGE
TO THIS POPULAR LINE
OF HEATING EQUIPMENT



ROUND GRAVITY
FURNACE

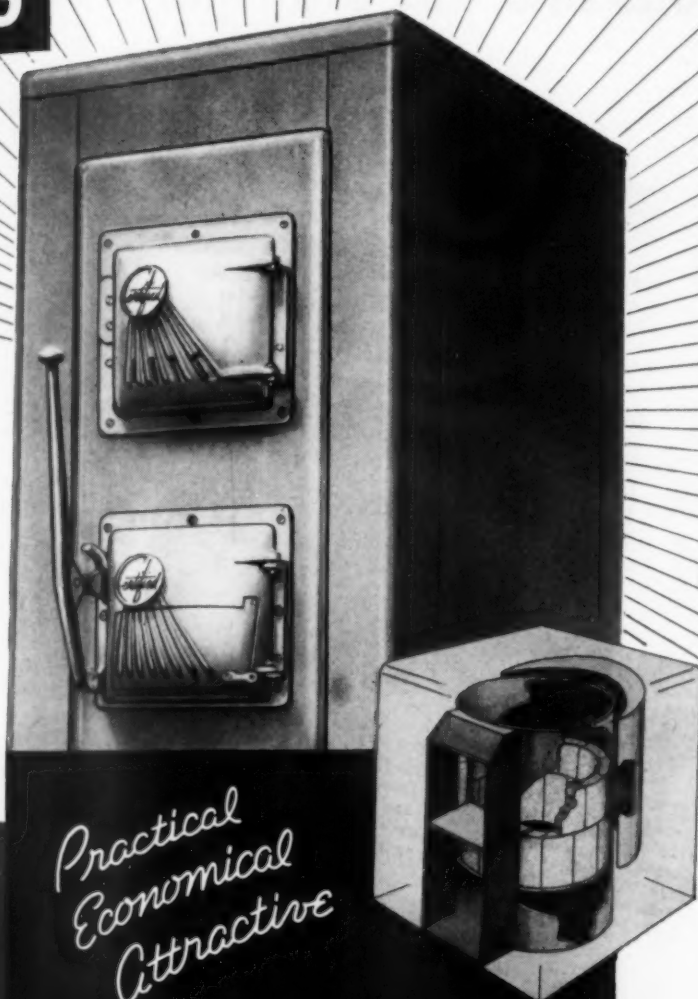
OIL & COAL FIRED
FORCED AIR UNIT



GAS FIRED
FORCED AIR UNIT



OIL COAL OR GAS
MAMMOTH
HEATING UNIT



*Practical
Economical
Attractive*

NEW Certified SQUARE CASING UNIT Enjoys Immediate Popularity

The reasons why are easy to discover. Smartness of style, with enamel finish and square lines, puts real beauty in the basement. Waist high shaker bar with friction eased grates and big wide doors guarantee ease of operation. Perma-weld construction and economy of operation give both health and budget a break. No wonder the Certified Square Gravity Furnace is our newest and brightest star.

*Write for bulletin #159-C
for complete details.*

CERTIFIED FURNACE CO.

DIVISION OF STAINLESS & STEEL PRODUCTS COMPANY

1000 BERRY AVE.

ST. PAUL 4, MINN.

Make up to \$60.00 Extra Sales to Every Heater Owner in Your Town!

TRIPLE Summer Sales Opportunity



A-P Heat Regulator Set Adds Thermostat Comfort Control

1 Accurately controls oil heaters through sensitive thermostat. Ends wasteful overheating. Saves Oil. Makes heater AUTOMATIC. For all new or old heaters made since 1939 using A-P Model 240-DR, UR, or YR Manual Controls.



A-P OILIFTER Ends Oil Hauling

2 Automatically "lifts" oil 3 stories high to any vaporizing burner appliance. Uses only one small copper pipe. Saves time, effort, avoids oil spilling, wastage.



Fuel Oil TRAP-IT Keeps Oil Lines Clean

3 Catches dirt, sludge, water. Improves heating efficiency. Reduces service and repair expense.

The New **AP** Sales and Advertising Program
**TODAY'S GREATEST
ACCESSORY SALES OPPORTUNITY**

**TIE-IN on this Accessory
Sales Opportunity Today**

Ask Your Appliance Jobber or Distributor for complete details and selling material OR RETURN THE COUPON NOW...



DEPENDABLE OIL CONTROLS
DESIGNED TO ELIMINATE SERVICING

Full Barrage of "Sales Ammunition"



Folders for mailing • Direct Mail Broadsides
Consumer Catalogs • Oil Control Tags
Newspaper Ad Mats

PLUS



15-minute SLIDE-SOUND FILM for dealer and salesman showing,

entitled "Comfort with Automatic Heating," together with "take-away" Slide Film Book outlining details in film.



"Album of Famous Vaporizing Oil Burning Appliances."

... Listing and illustrating all Appliances using A-P Safety Controls — prospects for Accessory Sales.

070

AUTOMATIC PRODUCTS COMPANY

2452 North Thirty-Second St. • Milwaukee 10, Wisconsin

Enter our Order for immediate shipment of: List
—A-P Model 240-ED Heat Regulator Sets @ \$22.97
—A-P Model 246 Oilifter @ \$34.48
—A-P Model 243 Fuel Oil "Trap-It" @ \$ 3.50
Plus Complete "Sales Ammunition" less discount

Name _____
Address _____
City _____ State _____
Signed by _____
Our Jobber _____

Right down your alley!

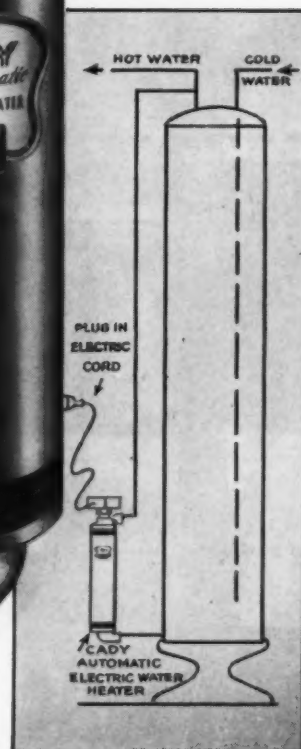
NEW AUTOMATIC ELECTRIC WATER HEATER *that you can install*

- NO NEW WIRING NEEDED
- PLUGS INTO EXISTING WALL OUTLETS
- DESIGNED FOR ANY TANK FROM 5 TO 30 GALLONS

NOW you can make extra sales by supplying the growing demand for electrical water heater installations. Consumer acceptance is already established. You can sell and install the new Cady Automatic Electric Water Heater without the aid of an electrician. It hooks onto any storage tank from 5 to 30 gallons by connecting two pipes and plugging in a cord to any 110-120 volt A.C. wall outlet.

The Cady Water Heater is a simple, efficient, low-cost unit... a quality product throughout. Heating element approved by Underwriters' Laboratories. Copper and brass waterways throughout. Fiberglass insulated metal jacket. Positive, built-in automatic control with temperature adjustable 80° to 180°. 1000-watt element recovery rate 7½ gallons per hour, 60° rise. 1500-watt element, 10½ gallons per hour. 6-foot plug-in cord. Size 4½" x 16½" overall.

Send today for particulars. **The Cady Company, Dept. S,**
123 Georgia Ave., Providence 5, R. I. (Subsidiary of General Fittings Co.)



AUTOMATIC

CADY

WATER HEATER

ELECTRIC

"The Airtemp line has been
a real money-maker for us!"

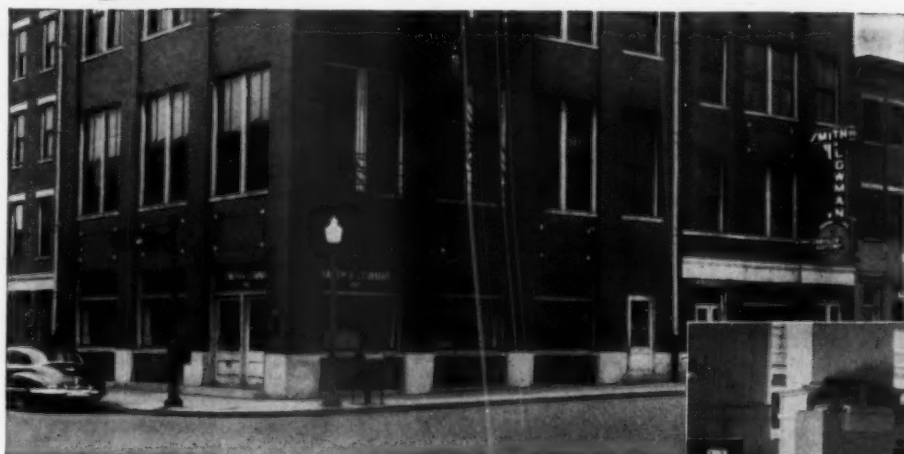
WRITE SMITH & LOWMAN, Executives



CHESTER A. SMITH



M. G. LOWMAN



"The Chrysler Airtemp line enjoys greater consumer demand than ever before . . ." report Cincinnati Airtemp dealers M. G. Lowman and Chester A. Smith. "These products build repeat business—the strong advertising support helps greatly—and the 4-season line insures us against slump periods. Yes, the Airtemp line has been a real money-maker for us."

Before *you* make your decision, get the facts on Airtemp. Learn full details on the "Basic 6" factors essential to a profitable dealership—and see how Chrysler Airtemp gives you ALL 6! Mail the coupon now—we'll send details promptly.



Upper Left, Smith & Lowman headquarters at Court & Plum Sts., Cincinnati, Ohio. Lower photo, interior of Showroom.

Chrysler Airtemp
AIR CONDITIONING

HEATING • COMMERCIAL REFRIGERATION

AIRTEMP DIVISION OF CHRYSLER CORPORATION

Dayton 1, Ohio

In Canada: Therm-O-Rite Products, Ltd., Toronto

Mail
today for
Details

AIRTEMP DIVISION OF CHRYSLER CORPORATION
Dayton 1, Ohio
OR SEE YOUR LOCAL CHRYSLER AIRTEMP DEALER

Name _____
Address _____
Phone _____
Kind of Business _____

(AA-8)



SELL STAINLESS "across the board" and PROFIT TWO WAYS

Shining example of the new-business opportunities for sheet metal contractors is this modern, stainless-equipped cafeteria.

Wherever food is processed or served in your community, there's a good chance for you to sell ARMCO Stainless Steel and gain (1) more profit per job, (2) more jobs through customer satisfaction and word-of-mouth advertising.

Food-handling equipment is only one of many fields where you can use ARMCO Stainless Steel to advantage. Stainless roof drainage systems, storefronts, marquees and other architectural work offer excellent opportunities. Many paper mills, textile mills and other

industrial plants require "tailor-made" stainless installations.

Whatever the application, there is a type or finish of ARMCO Stainless Steel to meet the need. This gleaming, rustless metal can be worked readily in the shop, whether it's to be sheared, formed, punched, welded or soldered.

Your ARMCO Distributor can supply you with ARMCO Stainless sheets, bars and angles —also information on fabricating with regular shop equipment. Get in touch with him, or write Armco Steel Corporation, 97 Curtis Street, Middletown, Ohio. Export: The Armco International Corporation.

ARMCO STAINLESS STEELS

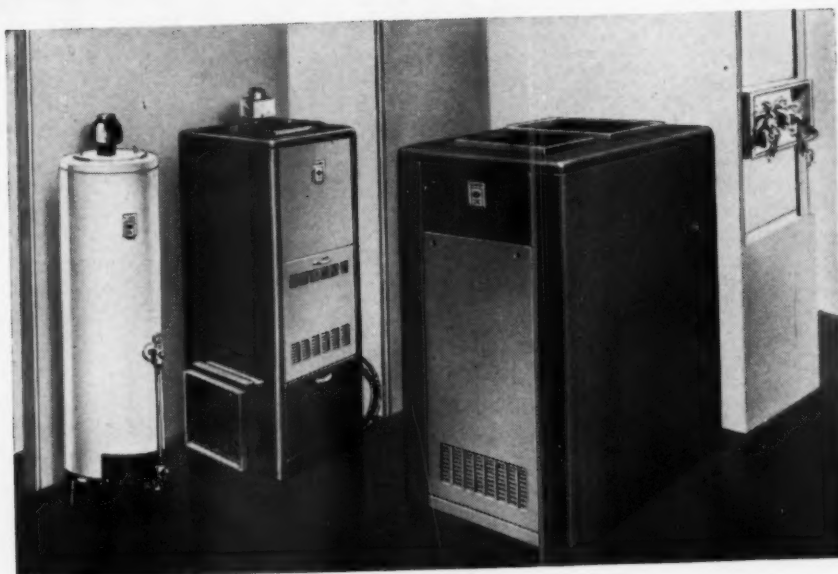


AMERICAN-Standard UNIT DISPLAYS

the modern ready-built backgrounds

... create desire for
the products you sell!

... make it easier for
you to close sales!



This high wall UNIT DISPLAY provides a pleasing background for heating equipment. Shown are the Budget gas fired Water Heater, the Wyandotte gas fired Air Conditioner, and the Saratoga oil fired Winter Air Conditioner.

ACCLAIMED as the most dramatic, most practical selling aids ever offered the industry, American-Standard UNIT DISPLAYS will build better business for you by displaying the products you sell in attractive, realistic room-like settings.

With the different backgrounds available, you can easily, quickly set up many combinations of high and low displays that will transform your store into an eye-catching salesroom.

For detailed, practical suggestions on making your store an attractive salesroom, see the booklet, "Unit Displays." Another booklet, "Plan for Better Business," describes all the selling tools offered by American-Standard and tells how you can use this powerful program to sell more heating jobs. Ask your Wholesale Distributor for these important booklets now. American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.



AMERICAN-Standard offers a complete set of Selling Tools to help you—



AMERICAN-Standard
First in Heating and Plumbing

YOU CAN'T MISS WITH SUPPORT LIKE THIS!

LOOK FOR THE MARK OF MERIT—It identifies the world's largest line of Heating and Plumbing Products for every use... including Boilers, Warm Air Furnaces, Winter Air Conditioners, for all fuels—Water Heaters—Radiators, Convectors, Enclosures—Gas and Oil Burners—Heating Accessories—Bathtubs, Water Closets, Lavatories, Kitchen Sinks, Laundry Trays, Brass Trim—and specialized products for Hospitals, Hotels, Schools, Ships and Railroads.

THERMO-DRIP

HEAT REGULATED

HUMIDIFIERS

FOR EVERY
TYPE or MAKE
OF WARM AIR FURNACE

Low Cost Thermo-Drip Humidifiers are the most efficient in the heating field today... attach quickly and easily to any type or make of furnace... adjust automatically to every humidifying requirement.

Thermo-Drip Humidifiers moisten the air as it is heated... in direct proportion to temperature. Foolproof bi-metal thermostatic controls regulate the water feed and accurately control the amount of vaporization. Write today for complete catalogues, deliveries, and prices.

Dept. A-848

Automatic
HUMIDIFIER CO.
CEDAR FALLS, IOWA

*Sure it's a swell idea—
and it will stand up!*

That's what you want to know before you accept any new product

Everybody agrees—the sensational PANELOX Stainless Steel Combustion Chamber is a swell idea. Those who've used it know how good it really is.

But for any who may question its ability to stand up, let's look at the facts.

FACT 1—FINEST STEEL. The PANELOX is made of the finest heat-resistant stainless steel. Highest in chromium content to withstand temperatures higher than are experienced in domestic oil burner operation, and resistant to corrosion. Not affected by sulphur-bearing oils.

FACT 2—EXPANDS, CONTRACTS. The PANELOX is scientifically designed to allow for expansion and contraction. The interlocking seams, an exclusive feature of PANELOX, take care of this—prevent warping and buckling. Four thicknesses of metal at the seams add "stand-up" rigidity and structural strength.

FACT 3—THE RECORD. When the proper size PANELOX has been installed according to directions, no PANELOX Combustion Chamber has ever failed to give satisfactory service.

These are facts! Add 'em up and you've got the answer to PANELOX, "It will stand up!"

Interested? Hustle that coupon off to us for full details and prices.

STAINLESS STEEL CHAMBER IS HERE TO STAY!

More than forty leading manufacturers are now furnishing stainless steel chambers as standard equipment on their 1948 models, because they stand up!

WHOLESALEERS—We help you sell! Write for details of new sales program.

STEF CO STEEL CO.

Heating Equipment Div. • Michigan City, Indiana

HEAT-RESISTANT STAINLESS STEEL

PANELOX

(Trade Mark Reg.)

COMBUSTION CHAMBER FOR OIL BURNERS

CHECK THESE PANELOX FEATURES

and you'll see why the PANELOX is a class by itself for domestic oil burners • light weight • easy to handle • no break-ups • no buckling • no rusting • no tools • panels slide together easily, quickly • installed in minutes • heats up in seconds • saves fuel • saves money • reduces room smoke, soot, oily fumes • provides the uniform heat and prevents overfiring.

STEF CO STEEL CO., Dept. A.
Heating Equipment Div., Michigan City, Ind.

- ☐ Send full details and prices on PANELOX Stainless Steel Combustion Chambers
- ☐ Enter our order for _____ PANELOX Chambers _____ G. P. H.

Firm Name _____

Address _____

City _____ Zone _____ State _____



Every House Needs **COPPER** to cut Maintenance Costs

THERE ARE mighty good reasons for using copper to flash a home. It takes just as much labor to install less permanent material. Hence, the intelligent home owner is quick to see the ultimate saving and extra security of copper. And quick to appreciate the service of the contractor who installs it.

On the job, copper is easy to work with. It's readily formed and soldered. It possesses adequate strength and toughness. Yes, there's extra satisfaction in doing any job the way you know it *should* be done.

SPECIAL NOTES—1. Standing seam entrance hoods give you a profitable source of extra business. 2. The concealed window flashing shown above is thin, electro-deposited copper bonded to building paper.

4807

ANACONDA
True metal by copper
Anaconda
SHEET COPPER

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD.,
New Toronto, Ont.

**Will your customers be lost
in the scramble for
fuel again this winter?**



**APPROVED DOMESTIC
AUTOMATIC
ANTHRACITE BURNERS**

Stokers

ALLEN STOKER
ANCHOR STOKER
CATSKILL STOKER
COOPER STOKER
ELECTRIC FURNACE-MAN
FAIRBANKS-MORSE STOKER
FUEL SAVERS STOKER
IRON FIREMAN
MOTORSTOKOR
STEWART-ROGERS STOKER
VAN WERT STOKER

Boiler-Burner Units

WAGNER STOKER-BOILER
ANTHRATUBE
AMERICAN BOILER WORKS
AXEMAN-ANDERSON

**Recommend Anthracite Heating
for their comfort next winter**

● Recommend the "unbeatable heating combination" of plentiful anthracite *plus* a modern anthracite stoker to your customers. It will give them all the heat they *want* when they *want* it.

They won't have to worry about the experts' prediction that shortages of other fuels will last at least 3 to 5 more years. And, they will have these three important *extras*:

Plentiful Heat A full year's supply of plentiful anthracite can be stored in advance of the actual need. Occupants never need to turn

thermostats to chilly levels to conserve fuel.

Completely Automatic Heat Modern hard coal stokers are fully automatic . . . from bin feed to ash removal. Sensitive thermostatic controls keep heat steady regardless of outside temperatures.

Economical Heat Stokers use the smaller, cheaper stoker sizes of hard coal . . . reduce fuel bills as much as 52%.

Get all the details on heating with *all* types of modern anthracite heating equipment including the revolutionary new anthratube. Simply fill out and mail the coupon, today.



ANTHRACITE INSTITUTE

101 Park Avenue • New York 17, New York

ANTHRACITE INSTITUTE
Dept. 8P, 101 Park Avenue, New York 17, N. Y.

Please send me more information on anthracite and anthracite heating including stokers and the new anthratube.

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

PLEASE PRINT



*On those summer
check-ups*

Don't overlook the float valve sales

Want some extra profits?—better still, some practically effortless profits? Then just have your men make it an iron clad rule to check the condition of the float valve of the humidifier pan on every service call. If you do, you'll be surprised at how many McDonnell Snap Action Float Valves you'll sell.

Finding needs for dependable McDonnell Float Valves is like shooting fish in a barrel because so many of the furnaces in service are equipped with old style "dribbler" float valves that are often plugged up or otherwise inoperative—usually beyond repair. When you replace such valves with the McDonnell Snap Action Float Valve you do the furnace owner a real service. It is the first real *engineered* float valve for humidifier pans as explained opposite.

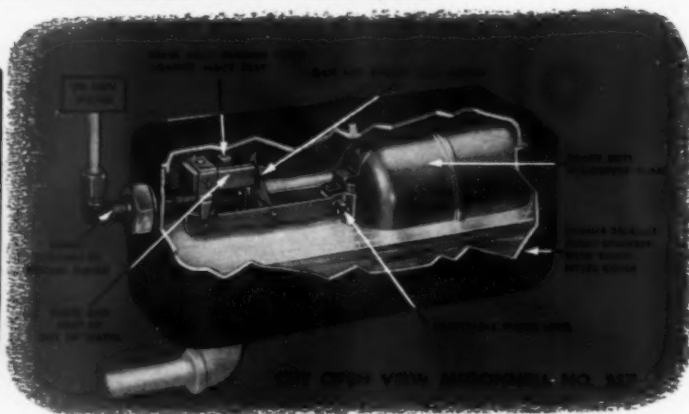
In today's mail a Wisconsin contractor writes: "Please send us a No. 517 float valve adaptable to any old furnace." We don't know just how he meant "any old furnace," but we know how we took it. We suspected the happy idea had just struck him that it's open season for float valves on any old furnace, any old place, any old time.

And it is! . . . if you check the humidifier valve on every service call — burner adjustment, filter replacement, fire pot repair, or whatever it is. Ask for details and surprisingly moderate prices. McDonnell Snap Action Valves are optional equipment on most good furnaces; so be sure to specify them on the new furnaces you order.

MCDONNELL & MILLER, INC.
1318 Wrigley Building, Chicago 11, Illinois

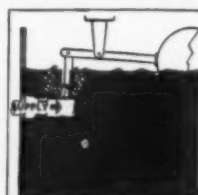
Doing One Thing Well
REG. U. S. PAT. OFF.

MCDONNELL Snap Action FLOAT VALVE



McDonnell Float Valves are available without float chamber (No. 417) or mounted in a sturdy die cast chamber with neat, well-fitted cover (No. 517). One of these is adaptable to any furnace, old or new.

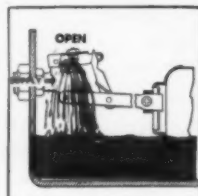
The engineered float valve for humidifier pans



★ NO DRIBBLING ACTION LIKE THIS!

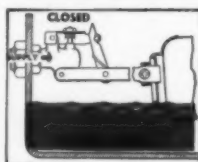
Valves that just dribble water as shown here, don't dribble very long before they clog up with lime and debris.

★ INSTEAD OF DRIBBLING, SNAP ACTION LIKE THIS;



An ingenious cam and roller mechanism snaps the McDonnell Float Valve wide open when float falls 1/4 inch . . . opens up full stream that flushes out and keeps it operative.

★ TIGHT CLOSING TOO!



When water level is restored the valve snaps to a tight seal . . . bottle tight against water supply pressures up to 150 lbs. Note also that valve and seat are up out of the water.

And this is only the start of the story. Other features are the provision for adjusting water level; the heavy gauge pure copper float (not just copper plated); the monel strainer as an added protection of the valve.

**THE 1948 HEATING SEASON
IS HERE
DON'T BE CAUGHT SHORT**



**GAS - COAL - OIL
WARM AIR FURNACES
AND
AIR CONDITIONING UNITS**

1948 will be a big year for Furnace Dealers. We are prepared to serve you. Wise units are available for prompt delivery. Send for our exclusive agency plan.

THE WISE FURNACE CO. AKRON, O.



*Take Advantage
NOW of increased
Production
Facilities*

PACKARD SUNLIGHT MOTORS

New plant, new production facilities, make Packard Sunlight Motors available to additional manufacturers of motor-driven products. A long record of dependable performance on leading appliances establishes Packard Sunlight Fractional Horsepower Motors as a sound choice . . . for trade acceptance, for customer satisfaction.

Packard
REG. U.S. PAT. OFF.
TRADE MARK

Packard Electric Division, General Motors Corporation, Warren, Ohio

PACKARD SUNLIGHT MOTORS for: compressors . . . washing machines . . . power-driven bench tools . . . ironers . . . milk separators . . . milking machines . . . furnace blowers . . . stokers . . . oil burners . . . water pumps . . . ventilators . . . and many other applications.
DEPENDABLE APPLIANCE MOTORS FOR THIRTY-TWO YEARS

WE BUILD PRESSES FOR THE JOE

NOT BY THE TON

... K. R. Wilson

Metal Equipment Manufacturer uses KRW Presses to do the work of heavier, more expensive equipment... Do it as fast, at greatly

Reduced Cost!

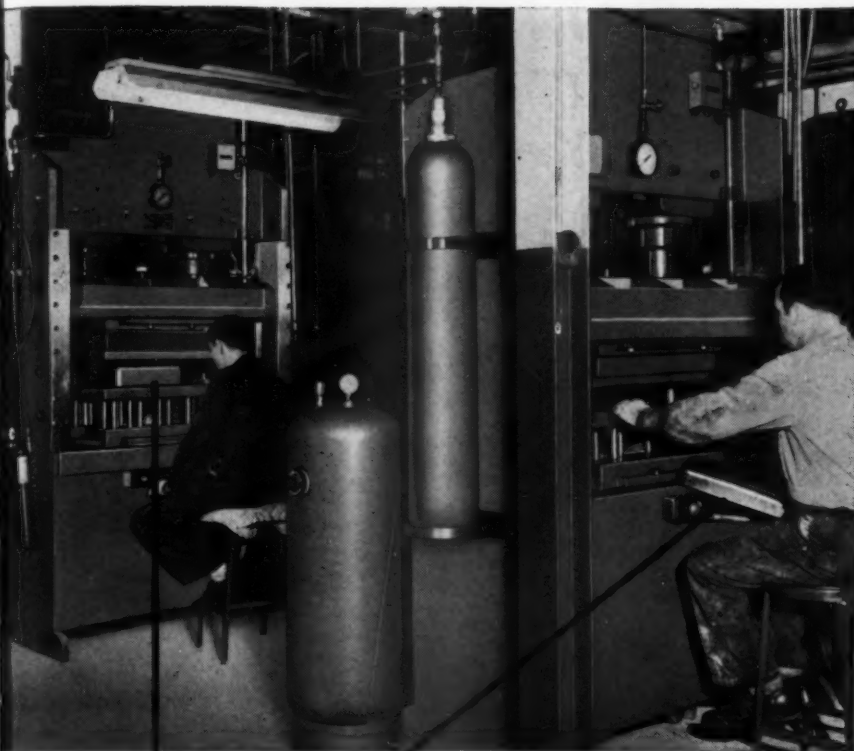
● Many a KRW Press user discovered long ago that a large percentage of forming, drawing and stamping work does not require the use of large, heavy-tonnage presses with their accompanying high initial and operating cost.

Production records, in a variety of industries, show that KRW Presses greatly reduce costs. First investment is very low, operating costs are still lower. In one instance, the purchase price of a KRW Stamping Press was less than the foundation cost for heavier equipment.

KRW Presses are highly flexible... they can be built in varying bed lengths. KRW Presses are available as either Gap, Open End or Closed End Types. Tonnage pressures vary from 25 to 100 tons. Because they are hydraulically operated and not mechanically driven, they are quiet and vibrationless in operation. Platens can be stopped and reversed at any point in their travel.

Let us know your needs... we are fully equipped to engineer our equipment to handle your work. In the majority of cases, we can make delivery in a fraction of the time required for other type presses. Let us hear from you.

ALL TYPES OF DIES. We are equipped to engineer and build dies to meet your specifications. All we need is available technical data, blueprints and, where practical, a sample piece of work. We'll quote prices and delivery date.



● Illustration shows installation of two KRW 100-ton presses in nationally-known manufacturing plant making 3 and 4 inch draws as shown completed at left.



QUIET...



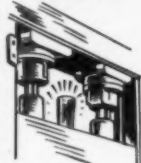
IT WOULDN'T WAKE A BABY. Easy, even hydraulic pressure does the work. No jarring impact as the die bottoms. No shock to the worker to lessen efficiency.

DEFLECTION NIL...



NO SWAYBACK PLATENS TO WORRY ABOUT. Where pressures require it, bed rails, platens and head are trussed and ribbed to eliminate deflection.

VIBRATIONLESS...



GLASS OF WATER ON THE PLATEN, YOU'LL NEVER SPILL A DROP. That's how evenly pressures are distributed over the unit. That too, is another reason why dies last longer in a KRW.

**NAME YOUR NEEDS...WE'LL QUOTE PRICE
AND QUICK-DELIVERY DATE...MAIL TODAY**

K·R·WILSON

215 MAIN ST. · BUFFALO 3, N. Y.

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

Please Send me complete information on new KRW
100-ton Hydraulic Presses.

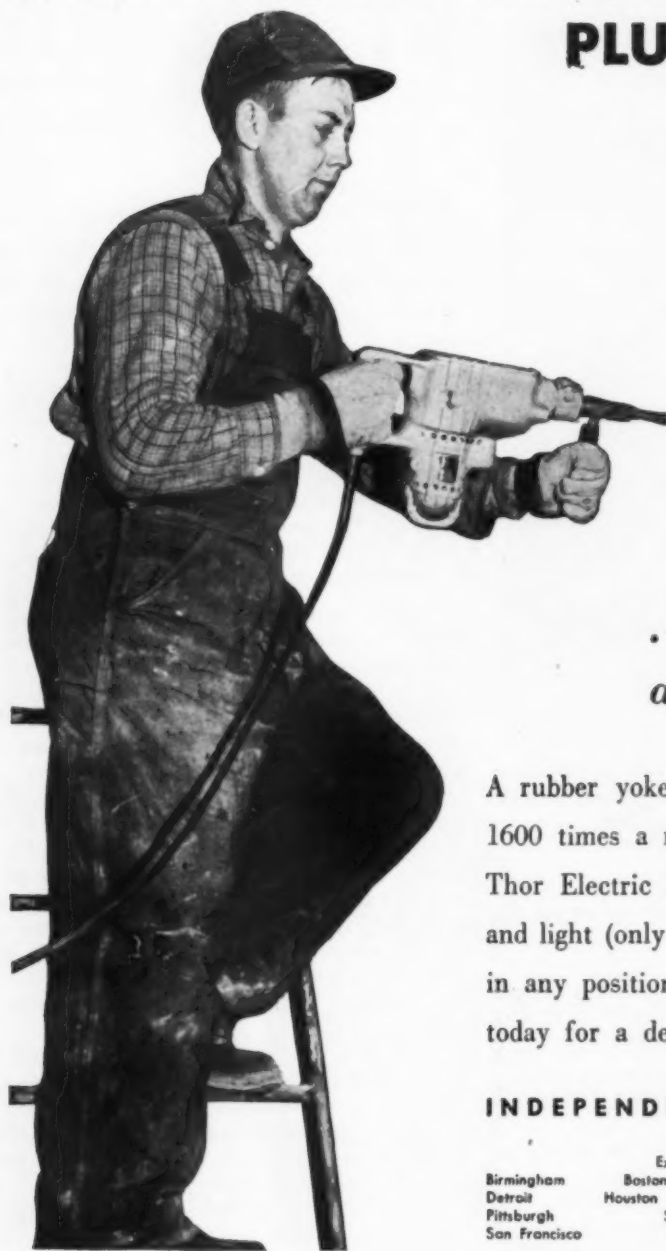
Name

Address

HANDLING EASE...

DRILLING IN CONCRETE • CHIPPING • GOUGING • CUTTING • SCALING • CHANNELING

PLUS *Sling Shot* POWER



Thor

ELECTRIC HAMMERS

... get jobs done faster
at lower operating costs!

A rubber yoke that "sling-shots" the piston back and forth 1600 times a minute, injects the extra power and speed into Thor Electric Hammers that gets jobs done faster. Compact and light (only 14 pounds), the Thor Hammer is easy to handle in any position. See for yourself—ask your Thor distributor today for a demonstration.

INDEPENDENT PNEUMATIC TOOL COMPANY

Aurora, Illinois

Birmingham	Boston	Buffalo	Chicago	Cincinnati	Cleveland	Denver
Detroit	Houston	Los Angeles	Milwaukee	New York	Philadelphia	Seattle
Pittsburgh	St. Louis	St. Paul	Salt Lake City			
San Francisco	Toronto, Canada		Sao Paulo, Brazil		London, England	

... **Thor** ... **PORTABLE POWER** ...
TOOLS

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DEALER COST of
Packaged, Cost-Cutting
FLATPAK
Preformed Aluminum
DUCTWORK

ONLY \$88⁵⁴

when bought in carton lots*

AVERAGE COST = \$9⁸⁴ per outlet!

Here's what you get! . . . all necessary trunk and stack fittings; sheet aluminum for trunk, plenum, and panning joists; preformed drive, plenum, and "S" clips and collar connectors; baseboard or high wall registers and grilles. Fittings are shipped nested 10 per carton; aluminum metal is in 100-lb. coils.

Packaged, Cost-Cutting FLATPAK . . . offers *complete* warm air heating or air conditioning ductwork systems. Fittings in all standard sizes and shapes, designed for quick-easy assembly on the job, are factory formed on precision presses. Parts fit together with *standard* flanges and Pittsburghs.

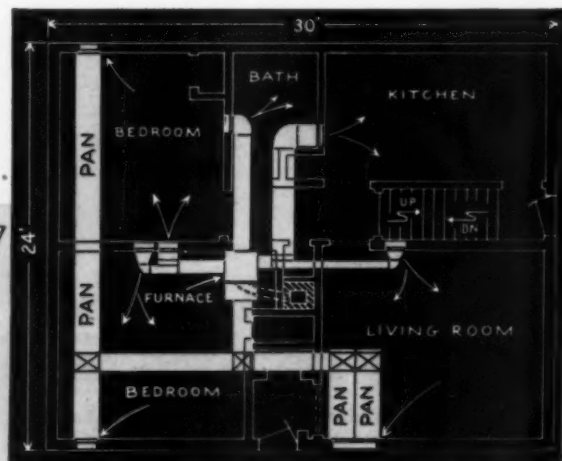
It's aluminum! . . . the ideal metal for air conditioning systems. It's one-third the weight of galvanized, has one-quarter the heat loss, has 90% reflectivity of radiant heat, resists corrosion, and transmits less combustion and mechanical noises. Aluminum is 2S½H, recommended for ductwork.

Packaged, Cost-Cutting FLATPAK . . . (1) cuts shipping costs because it's one-third the weight of galvanized;

(2) cuts storage costs because as packed flat it occupies one-sixth the space of assembled fittings; (3) cuts handling costs because preformed parts fit together quick-easy, lighter weight means less labor fatigue, packed in handy cartons means no in-transit damages.

*This is *actual* cost of FLATPAK required for house illustrated. However, factory shipments are in standard packages of 10 fittings per carton, and 20 rail and stack parts per carton, so there will be parts left over for other jobs; or, our distributor will arrange to split cartons to provide exact quantity needed, at a small premium.

*Immediate
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Typical 4½-room house with basement, showing FLATPAK installation.

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FIBERGLAS* Membrane Fabric

puts the "proof" in waterproofing

Here at last is a waterproofing membrane fabric that overcomes the principal causes of waterproofing membrane failure. It won't rot, won't char, won't "age" with wear and tear.

Woven of Fiberglas Yarns, there is nothing in it that can possibly rot or decay. Dampness will never affect the strength of its smoothly woven mesh. Neither will hot tar nor asphalt. Fiberglas Membrane Fabric safely withstands hot applications up to 1000°.

Because its glass fibers have astonishing tensile strength and do not "age" in

use, this fabric resists wear and tear that would ruin any conventional organic material.

Weighing only 8 pounds to the 50-square-yard roll, Fiberglas Membrane Fabric is easy to use, has a high bitumen pickup factor and molds itself to each detail of contour. It is manufactured by Lexington Supply Company under the trade name of "GLASFAB".

For further information, get in touch with your nearest Fiberglas branch office or write to Owens-Corning Fiberglas Corporation, Dept. 930, Toledo 1, Ohio.

In Canada: Fiberglas Canada Ltd., Toronto, Ontario.



Actual size closeup, showing uniformity of weave of this completely inorganic glass fabric.

Rolling out Fiberglas Membrane Fabric for embedding in first coating of mastic. On roofs like this, a corrugated roller easily molds fabric into surface contours.

OWENS-CORNING

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TM. REG. U.S. PAT. OFF.

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MATERIALS**

BUILDING INSULATION • ACOUSTICAL
TILE AND BOARD • ROOF INSULATION
• MEMBRANE FABRIC • ALSO BASIC
MATERIALS FOR SIDING, ETC.



*FIBERGLAS is the trade mark (Reg. U. S. Pat. Off.) for a variety of products made of or with glass fibers by Owens-Corning Fiberglas Corporation.



Need quick service on stainless sheets?

Call Ryerson for Time-Tested Allegheny Stainless

When sheet metal jobs call for material that's longer lasting, better looking—and more readily available, it will pay you to call Ryerson for Allegheny stainless. You can get quick shipment of any quantity. The same prompt, personal service whether you need a single piece for experimental use or a truck load.

You can call, confident of getting the best. Allegheny Metal is the time-tested stainless steel made by America's oldest stainless producer. And just as Allegheny was the pioneer manufacturer, so Ryerson was the first to offer

stainless from stock. A quarter century of stainless experience enables us to give practical assistance in specifying and fabricating this profit-building metal.

Expert counsel is always available. Many types, gauges and finishes are always on hand at all of our thirteen conveniently-located plants. And Ryerson stainless stocks also include welding rod and fastenings as well as bars, plates, tubing, etc. So contact the plant nearest you for complete stainless service. Current listing of actual inventory sent on request.

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Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles and San Francisco.

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Steel Changes Pricing System

RECENT revisions in the pricing system of steel products shipped from mills not located at a basing point confirm previous apprehension about the effects from the Supreme Court decision in the proceedings of the Federal Trade Commission against members of the cement industry.

For some time FTC has been taking a keen interest in the pricing practices of a number of industries. Price advantages to large and steady customers, and base point pricing systems such as those in the steel and cement industries, were interpreted as a violation of the Robinson-Patman Act. But the commission has always had a hard time policing this problem because most pricing systems are a result of competition. It was difficult to establish them as violations because it was necessary to show such discrimination tends toward monopoly.

When the Supreme Court upheld the FTC contention that base pricing is discriminatory, it started a chain of events that throws a question of illegality over the pricing practices of thousands of businesses. What started as an academic legal argument has now become an important practical problem in business planning, selling, pricing, and location. Coupling the abolition of the basing point price system with an average price hike of \$9.34 per ton of steel, it is expected that the general price structure of all basic commodities will receive a severe jolt that must be reflected in retail prices.

Operating under a multiple base pricing system, the price for cement was the same irrespective of the point of shipment. The Cement Institute distributed freight rate books showing the delivered prices to be followed and the freight from the base to destination. If the formula was not followed, competition would enter the territory with lower prices and force compliance or loss of business. If a mill wanted to sell in a territory other than that on which its delivered price was based, it lowered its mill net sufficiently to absorb the freight difference. Also, a mill that was not located at a basing

point would charge freight from the base even if not actually incurred.

FTC considered all this discriminatory and the Supreme Court agreed because no mill could absorb transportation or charge phantom freight without discriminating against some of its customers. Although the legislative history of the Robinson-Patman Act does not reconcile this interpretation, FTC viewpoint now considers the law violated whenever the buyer does not pay the actual freight incurred from point of shipment to destination.

Since mid-July, major steel producers have announced the adoption of the FOB pricing system. "In the immediate future," said Benjamin F. Fairless of United States Steel Corporation, "the steel producing subsidiaries of United States Steel Corporation will adopt the method of announcing prices for steel products at the mill or shipping point, or, if the customer so desires, at delivered prices which reflect full transportation charges from shipping point to destination."

"We have no recourse other than to comply with the law of the land . . . regardless of the hardships and dislocations to American industry which may result."

Since transportation charges of steel products is an important cost factor, users will look for steel at nearby points. However, the immediate effect of this does not appear important because today a user is lucky to fulfill his needs anywhere from any source. Some sources feel that more steel will be available at points remote from mills because there is no income advantage for the mill to sell in its immediate vicinity.

Price increases in all steel consuming industries are expected to follow steel's spurt on the inflation spiral. In the future, if the present business pace slackens, the competitive effects from the FOB pricing system will become apparent by affecting the uniform nature of low-priced steel of the past.



Arnold Kruckman's

THIS reporter has been an observer in the capital for 18 years. The trouble with a more or less continuous immersion in this vast pool of politics is that you almost insensibly lose touch with the actualities, the realities of the living, human substances that are the commodities in which politicians deal. For instance, your problems as a business man are primarily important to the politician as elements he can use to get votes to get influence to attain power. Even though this is the foundation of all political authority it does not mean that all politicians are overweeningly selfish. Those who are elected, and who wash in and out of the capital with the changes in public sentiment, are usually closer to you and your feelings and ideas than are those who come here as career men and women in the public service. It is in this personnel of permanent government, the almost invisible government, which is on the job no matter what the label for the administration may be, that you find the instinct for getting aboard the right bandwagon is developed to an uncanny degree. They are politically weather-wise like the birds of the air and the creatures of the wild are meteorologically wise. Be it recorded, however, that the great majority of these devoted public servants are also honest, sincere, and patriotic. The point of all this is that you out there, wherever you may be, probably have a much keener perception of what people in business and in the professions actually need and want from the politicians than this extraordinary community we call Washington.

Republican-Democratic Conventions

These thoughts are prompted by the experiences at the two recent national nominating conventions in Philadelphia. The Republican convention was well-oiled, well-articulated, well-organized, essentially a smoothly functioning mechanism, working towards a foregone conclusion as to who would be nominated, and an absolute assurance that the candidate would be elected in November at the polls. There was not only one bandwagon but there were many bandwagons to accommodate the swarming horde which eagerly sought a place to hang-on. In contrast to this atmosphere of certainty and enthusiasm the Democratic National Convention started slowly, glumly, flat and rather stale, the camp-followers and the time-servers apparently being the principal actors on the floor among the delegates on the first day. There was only one real downtown headquarters, and that was the great room in the Bellevue-Stratford set aside as the rallying place for the Trumanites. It had no printed

label over the door: simply a huge portrait of Truman. Inside nothing was happening; there were no pamphlets, no refreshments, few buttons; apparently its chief use was as a lounging place for weary wanderers. You heard little conversation. People strolled in and hesitated doubtfully, and then strolled out again to find other headquarters which were chiefly placards and empty rooms. The only headquarters which had a semblance of life were those devoted to the state delegations.

Truman Dominates Party Convention

A friend who had been in Congress, and who stands high in the councils of the orthodox Democrat, remarked the first day at the convention auditorium: "It's a hot wake!" But behind this curtain of dreariness and drabness and wearily prowling men and women the orthodox, the unorthodox, and those usually quite beyond the pale, were making medicine in the classic "smoke-filled rooms", and the word came out with authority that Jimmy Roosevelt had been soundly and publicly spanked by the California delegation for his attempt to lead a revolt against Truman. It became more and more clear that the convention not only was under the complete domination of the President because he is the incumbent executive, but because he is a consummate politician—in a local sense. People often make the mistake of concluding that politics is a racket. Others wish to define it as a science. It is neither; it is an art, a highly skilled art. Jim Farley, who was very much present, is probably the most skillful political artist of America, barring none in any party. Mr. Farley is able to practice his art on the national canvas. Mr. Truman has more limited skills, probably by reason of lesser intellectual capacities. Those who knew him in the Army will tell you he made a very good captain of his battery, but that he would have been a poor colonel. However, at this convention his skill as a politician, joined with his powerful position as President, and the aid that was mustered for him from the radical group by such helpers as David K. Niles, gave him the control. There never was the slightest doubt regarding who would be nominated as President, any more than there was doubt that Dewey would be the Republican nominee.

Civil Rights—Fair Employment

In the opinion of this reporter the revolt of the South is far more apparent than real. The issue there, as it will be in the East, the Midwest, the North, and the West, is not economic: it is emotional, and is as

Washington Letter



highly charged with emotions as is any other direct collision between people which involves deep passions. The civil rights issue, strangely enough, by no means has following only among those who live outside of the South. It is amazing to find a great number of younger Southerners support the President in his civil rights demands. Unlike their elders, they have been exposed in their colleges, even in the South, to what often are called radical ideas, and intellectually they ardently champion those equities for Negroes and others which are the core of the civil rights program. It is entirely doubtful whether or not they would champion for the Negro those intimate social rights which appear to be inextricably woven into the civil rights program; but the feeling about the civil rights program has become so intense, that these younger Southerners emotionally fight for the equities which are based upon intellectual reasoning. The civil rights program will unquestionably be the chief issue of the campaign. It is important to business everywhere because it inevitably brings in its wake the creation of a Fair Employment Practices Commission. The establishment of the commission will give equal employment rights to Negroes, and others, with other racial groups. Abstractly it appears entirely reasonable; but in practice it almost wrecked some businesses during the war. The right of equal employment was so applied that some industries were forced to hire persons entirely unsuited to their jobs. Yet, if the employer discharged them, his business might be wrecked and he might be imprisoned. The right of equal employment bore especially heavily upon smaller business.

Housing Needs

Next to the civil rights program it was obvious at the Democratic convention that the housing needs of the nation would be the most insistent issue. Both Democratic and Republican platforms, those curious pronouncements of faith which are usually forgotten, pledge comprehensive housing legislation, including slum clearance and the initiation of low-rent housing projects by local agencies with Federal funds. As in the case of the civil rights program, there is scarcely any difference between the promises of the Democrats and the Republicans. There really is scarcely any difference in the platform declaration of faith as presented by either party. The names continue to be chiefly labels. The choice for the voter lies in the candidates: whether they represent conservative or liberal potentials.

In the gloomy dawn of the Democratic convention it was apparently the spirit to blame the other fellow for the shortcomings of whatever was lacking in the

Democratic administration. But as the hours rolled along whoever really breathes life into the party managed with extraordinary skill to focus the interest on the controversial issues, and to galvanize the convention into quick life. There was none of the brash vaudeville and the three-ring circus demonstrations which marked the Republican convention. The Memorial Hour, which really was a service in honor of Franklin Delano Roosevelt, was performed with dignity and with impressiveness. It was a highly effective, emotional appeal to loyalties akin to the sort of thing that caused women in the mining regions of Pennsylvania to kneel beside the tracks while FDR's train rolled past. And it was successful in jolting the delegates out of their defeatist apathy. By what alchemy it was accomplished this reporter has not been able to determine; but there was quickly infused into the convention optimism, enthusiasm, and energy, all of which was not touched by the fight which finally terminated with the rather unimpressive retirement of the Mississippi delegation. Most of the convention did not know either the Alabamans or the Mississippians had left the auditorium. The Alabama delegation actually never left; the Mississippians completely withdrew.

Our American Political Institutions

The leadership, undoubtedly aided by some art and skill, helped to place the convention on the footing that seems natural to a Democratic convention. The Republican convention was regular, cut and dried, and was clearly and obviously cut and dried. But the Democratic convention, while undoubtedly cut and dried in planned results, was conducted as nearly like a simple, ancient New England town meeting as any gathering that has been held in this country for many a year. It appeared to have a spontaneity, a freedom, a liberty of action, that was consistent with what it represented, and which apparently was a great stimulus to the delegates. A British observer sitting next to this reporter said: "This is the best example of pure Democracy in functioning activity I have ever encountered." Even the delegates themselves were moved to comment. The Florida delegate, who startled the convention by nominating, with complete casual spontaneity, Paul McNutt, from the floor, remarked that it was unthinkable to him that any one could do what he was doing anywhere else in the world. It placed some observers in the curious position of not having sympathy with some of the implicit principles of the gathering, nor with the political ideas held by its leaders, but with a prideful sense of deep accord

(Please turn to page 154)



Gene Brown, sales manager of Morrison Steel Products, Inc., Buffalo, and author of this sales manual is widely known for his practical programs for merchandising warm air heating equipment. As you will see when you read this first installment, the manual is outstanding for its vigorous and hard-hitting copy.

A Sales Manual With Punch

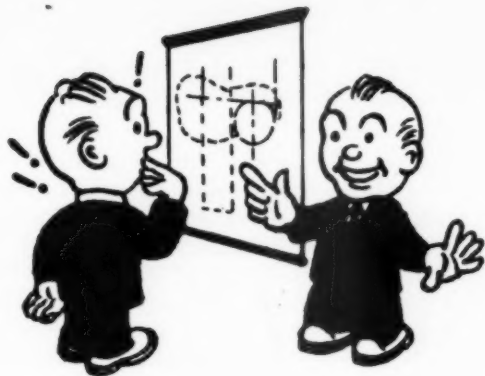
THE first thing to do, Mr. Dealer, is to take a good look at yourself. It may be a shock, but try to see yourself as others see you. Sit back and reflect long and well, for this is important. Ask yourself this—Where do I best fit in my organization? Am I best qualified to handle sales? Or shop supervision? Or job supervision?

If you honestly believe you are qualified to handle sales, and, even if you think you have been doing a good job of it, don't toss this booklet aside with the thought that it can't possibly apply to you. Perhaps it does apply to you; not only for your own application, but to assist you in training men as your organization grows.



If you decide that you can accomplish more by applying yourself to production and by turning sales over to someone else—and offhand we can name a hundred furnace men who ought to do just that—then what should you do? Hire a salesman! Simple, isn't it—only you don't pick good heating salesmen off trees. You must train your salesman and the first step is choosing a salesman to train.

We assume, of course, that your selection of a salesman is confined to men of pleasing personality and neat appearance. Determine first if he is sales-minded. Salesmanship is a dignified, respectable profession. If your man does not have that attitude toward selling, he is not the right one. No man with a hang-dog, apologetic attitude toward salesmanship should be considered.



Next—what does he know? He should have enough basic education to enable him to absorb and understand the functions of a heating plant, the construction of equipment and the principles of installation. An engineering background is desirable but not mandatory. The important things are a will and an ability to learn and an ambition to succeed.

Now don't just throw a set of literature at him and tell him to get going. Teach him the rudiments of heating first—show him the inside and outside of a furnace. Go over the whys and wherefores of each control with him. Take him out to a couple of dozen installations, and point out the difference between good installations and bad installations. And, brother, don't tell us you don't know of any bad installations.

When you get your man furnace-minded, get going on this or a similar sales manual together. Cuss it, or disagree with it if you will, but go through it—not once but several times. This one doesn't contain rules or cut and dried sales talks, but it does contain a lot of suggestions that you can absorb to good advantage.

Remember this—selling is not an incidental part of your business. Your existence depends on good installations but your *growth* depends on *sales*. Low bids, requiring no salesmanship, may bring you plenty of jobs—but *salesmanship* gives you profits.

In order to eliminate every possible handicap to sales, the dealer, after taking that long look at himself, should look at his establishment and ask himself these questions:

1. Is my place of business neat, clean and orderly?
2. Is my store front in good paint, the windows clean, and are my signs attractive and informative?
3. Is my display room adequate, with late models on the floor at all times?
4. Are my trucks (my rolling advertisements) in good condition, well painted and clean?

Yes, look around, Mr. Dealer. You may see the answer to why that chain store took that last sale away from you. Your customer has the right to judge the workmanship he can expect by your housekeeping—and many of you are lousy housekeepers.

You wouldn't be likely to patronize a grocer, butcher or tailor who had his place littered with junk, scraps and debris that has accumulated during the years. Your customers might feel the same way about you.

Pride in your own surroundings will indicate to your customer pride in your installations!

Now that you have looked at yourself and your shop, go take a look at your mechanics. Remember that every one of your employees is a salesman to a certain degree. Mrs. Jones will be skeptical of the completed job if your crew appears at her house looking like fugitives from a laundry. And if they proceed to splatter tobacco juice all over her basement, and indulge in a lot of profanity, she will be downright indignant.

We know that the furnace trade isn't the cleanest and most glamorous in the world, but attention to personal appearance and habits by everyone in your organization will reflect in your sales.

Carry your neatness and efficiency all the way down the line. Train your mechanics to do a good job, and instill in them pride for a job well done—and be sure that they clean up Mrs. Jones' basement after that job is done.



We now assume that you, as a salesman, have accumulated a basic knowledge of heating and an urge to really sell. The next item of major importance is to *know your product!*

Look over the bulletin furnished you by your manufacturer to describe his equipment. Point by point each feature is explained, and, if the bulletin is properly prepared, an explanation is given as to *why* each particular feature is included.

Study all of these points and use them in your sales talk, for an item that may seem unimportant to you, or one that you may take for granted, may be of considerable interest to your prospect. Don't be too technical, and don't use only trade terms. Remember, your prospect will probably understand no more of your trade lingo than you would of his.

NEWS SUMMARY OF THE MONTH

Basing Point to FOB

IT IS DIFFICULT TO GAUGE the full effect of the change from delivered prices for steel to mill prices plus freight. Inquiry at the Chicago offices of Carnegie-Illinois Steel Corp. indicated that the new pricing system would have little effect on Chicago area users of galvanized sheets. For example: the price of galvanized sheets delivered in Chicago was formerly \$77 a ton with a very minor handling charge, when the basing point pricing was abolished the mill price became \$77 and freight was added but it was negligible. Now the recent increase has brought the price to \$88 a ton and the freight is still a minor factor.

Of course, the point to consider, in this regard, is that the farther away the contractor is from his source of supply, the more his sheets will cost him. Freight rates can be easily obtained and added to the above quoted price to indicate the new delivered cost.

Some statements by steel company officials are worth quoting on this subject.

"This new system of pricing will radically restrict nation-wide competition," said Ben Moreell, president of Jones & Laughlin. "There should be no prohibition against charging lower mill prices to some customers than others when it is necessary to permit products to be sold in a distant market in competition with another producer more favorably located. Prompt action by congress is essential."

Benjamin F. Fairless, president of U. S. Steel, said, "The management of United States Steel believes that the systematic meeting of delivered prices of competitors is essential to the maintenance of competitive industry in this country and is of great benefit to many businesses, both large and small, throughout the United States. This practice of meeting competition through the absorption of freight is widely followed in American industry. Despite our serious doubts about the advisability and economic soundness of this radical change in our subsidiaries' marketing methods, we feel that they have no alternative other than to comply with the decision of the Supreme Court of the United States."

As the reader has probably observed there has been a flood of similar announcements of change from basing point pricing and also new price increases due to wage increases granted.

NLRB Jurisdictional Question

IN THE MONTH OF JUNE, a trial examiner, Horace A. Ruckel, stated that the National Labor Relations Board should refuse jurisdiction over a building trades contractor whose gross annual business amounted to only \$33,000. The statement appeared in the trial examiner's report in which he recommended dismissal of an unfair labor practice case because there was insufficient evidence to show that the contractor's business was either in or affected interstate commerce.

Examiner Ruckel observed that "the effect of this

business upon commerce is, at best, remote and slight." He added that *if* the operations of the small contractor involved affect interstate commerce within the meaning of the law" then so do those of nearly every corner grocery and neighborhood bakery in the country."

In a similar case in the month of July, a trial examiner held that a Denver, Colorado electrical contracting firm which received only \$55,000 worth of materials a year from outside Colorado *is* engaged in commerce under the Labor Management Relations Act.

Accordingly, the examiner, Earl S. Bellman, held that strikes which he found were called to force two other employers to stop doing business with the electrical firm violated the Act's ban on secondary boycotts. Previously, U. S. District Judge J. Foster Synes at Denver refused to grant an injunction to halt the boycott on the grounds that the dispute did not "affect commerce" within the meaning of the statute. The judge held that the dispute was "an intrastate one."

The examiner stated: "Gould & Preisner's annual inflow of over \$55,000 worth of materials is not negligible. Such an inflow is sufficient to establish the Board's jurisdiction. Accordingly, the undersigned finds that Gould & Preisner are engaged in commerce within the meaning of the Act."

Voluntary Steel Agreements

APPROXIMATELY 450 INDIVIDUAL MANUFACTURERS are eligible to participate in a voluntary agreement providing 233,000 tons of steel products during the eight months beginning August 1, for the production of warm air heating equipment, the Office of Industry Cooperation has announced.

This agreement has been approved by the Attorney General and the Secretary of Commerce, and requests for compliance are being forwarded to all proposed participants. Participants are required to accept the requests for compliance in order to obtain immunity under the anti-trust laws and the Federal Trade Commission Act.

Most of the 450 eligible manufacturers are in the small business category, although the voluntary agreement is limited to manufacturers of warm air heating equipment who normally secure steel supplies direct from mills, OIC said.

Eligible manufacturers of the following items are covered by the agreement: warm air furnaces, including jackets and casings, flue-connected floor and wall furnaces, registers and grilles, furnace blowers, furnace pipe, fittings and duct work.

Gas Summer Air Conditioning

THE AMERICAN GAS ASSOCIATION has announced the first Annual AGA Progress Award for Gas Summer Air Conditioning. The announcement states: "Much progress has been made in the Field of Gas Summer Air Conditioning. Each year marks some significant achievement in engineering, marketing, product im-

provement or some other phase of air conditioning . . . American Gas Association feels that such accomplishment merits special recognition. For the one company that stands highest in 1947 as having excelled in increasing the progress of Gas Summer Air Conditioning . . . this award will represent the sincere appreciation and respect of the entire Gas Industry."

Awards will consist of a trophy, \$1,000 in cash for the benefit of the personnel of the winning utility and individual key-chain miniatures of the trophy for members of the utility's air conditioning staff. Servel, Inc., of Evansville, Indiana has donated the awards.

Aluminum Wrought Products

SHIPMENTS OF ALUMINUM wrought products in May amounted to 133 million pounds, 4 per cent under the 139 million pounds shipped in April, according to the Bureau of the Census, Department of Commerce. However, this does not necessarily indicate a decreased rate of activity during the month, since there were fewer working days in May than in April. The May 1948 shipments were 25 per cent higher than the 107 million pounds shipped during May of last year.

The decrease in May shipments was accounted for principally by shipments of plate, sheet, and strip which dropped 5 per cent to 102 million pounds from the 107 million pounds shipped in April.

The above figures represent net shipments, which consist of total shipments of aluminum wrought products, less shipments to other manufacturers for further fabrication into other forms of these aluminum wrought products.

Stoker Sales

FACTORY SALES OF MECHANICAL COAL STOKERS of all sizes and types in May of this year amounted to 6,627 units, an increase of 36 per cent over the 3,884 units sold in April, and an increase of 22 per cent above the number of 5,451 units sold in May of 1947, according to a report of the Bureau of the Census based on figures supplied by 68 stoker manufacturing firms.

Stoker sales for the first five months of this year totaled 24,210 units compared with 25,544 machines for the same period in 1947 and 77,256 units for the first five months in 1946.

AGA Convention

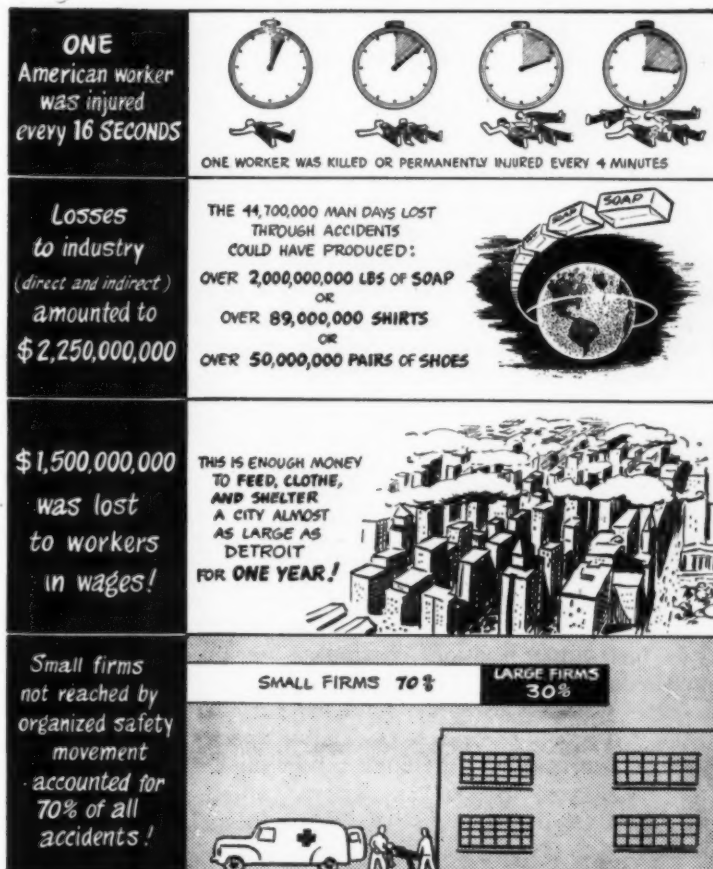
MORE THAN 10,000 PEOPLE are expected to attend the thirtieth annual convention of the American Gas Association and the exhibition of the Gas Appliance Manufacturers Association which will be held in Atlantic City, N. J., October 4-8. Factors influencing this anticipated record attendance are a strong business program, the largest and most spectacular exhibition of new and improved gas appliances and equipment, and greater participation of dealers and wholesalers from all parts of the country.

Business sessions have been planned to include a meeting of the Natural Gas Department on Monday morning, October 4; a meeting of the Manufactured Gas Department that afternoon; and general sessions on the mornings of October 5, 6 and 7. Sectional meetings will be held the afternoons of the latter three days

New Safety Campaign

HERE ARE SOME FACTS about accidents that highlight the need for the President's Industrial Safety Conference to be held in Washington September 27-29. The U. S. Department of Labor is in charge of planning and arrangements for the conference which will seek a practical, nation-wide solution for preventing work injuries and deaths. Participation of management, labor, private safety groups, and other interested parties is being planned.

THE TOLL OF JOB ACCIDENTS



and the popular Home Service Breakfast will take place Wednesday, October 7.

A major part of the program for October 7 and 8 will be directed toward dealers and a concerted effort is being made to extend the benefits of the appliance and equipment exhibition to a large segment of the gas appliance field. This is the first time the exhibition has been open to wholesalers and dealers and more than 25,000 of them are receiving special invitations to attend. A merchandising program for dealers is being arranged jointly by A.G.A. and G.A.M.A. for Thursday, October 7.

Liquefied petroleum dealers are also being invited to the exhibition and will hold a meeting on Friday, October 8, at which time G.A.M.A. will sponsor a merchandising clinic program.

Approximately 3,500 A.G.A. members have secured hotel reservations for the convention and all those planning to attend are urged to make their reservations immediately. Additional copies of the application blank for hotel reservations may be obtained from the Association in New York and should be filed promptly with the A.G.A. Housing Bureau, 16 Central Pier, Atlantic City, N. J.

In designating choice of hotels, attention is directed to the fact that meetings and headquarters of the Accounting Section will be at Haddon Hall, Industrial and Commercial and Residential Gas Sections at the Ritz-Carlton Hotel, and the Technical Section at the Ambassador Hotel.

Many vital industry-wide problems will be discussed at the general sessions by authoritative speakers from within and outside the gas industry. Among the topics on the tentative program are such important subjects as regulation, labor relations, salesmanship, promotion, advertising and research activities, and an analysis of the commercial gas load.

Jurisdictional Award

THE NEWLY ESTABLISHED NATIONAL JOINT BOARD for the settlement of jurisdictional disputes has announced a decision in a dispute between the iron workers and sheet metal workers over the installation of 18 ga sheet metal deck roofing. The board of trustees ruled that in accordance with a previous decision of record, the work belongs to the sheet metal workers.

OHI Board Meeting

THE BOARD OF DIRECTORS, Oil-Heat Institute of America, held a regular quarterly meeting at Portsmouth, N. H. on July 13th. Managing Director A. E. Hess in his report to the board noted only a minor increase in manufacturers' shipments now approximately a third of the rate of a year ago this time; an improvement in the fuel supply position; continuing steel shortage which will affect tank supply this fall and a much improved situation in public relations nationally.

W. A. Matheson, chairman, Legislative and Publicity Committee, presented a detailed report on the work of his Committee and public relations counsel, which report was authorized for distribution to the individual members of all divisions, now totaling nearly two thousand.

Also approved as the first of the vertical sections of the Divisions, under the recently changed constitution, were sections for producers of boiler-burner units; furnace-burner units; vaporizing central heating units and burners; steam generator units and power burners for conversion work. Temporary chairmen were chosen and organizational meetings will be held in the near future.

President Bohn reported progress in the formation of the new Technical Division with further meetings arranged.

The 1949 National Convention (Statler Hotel) and Industry Exposition (Mechanics Hall) was confirmed for Boston in the week of May 16th.

Furnace Shipments Increase Again

FACTORY SHIPMENTS OF WARM AIR FURNACES continued to rise in the month of May when 55,473 units valued at \$9.3 million were shipped, according to the Bureau of the Census, Department of Commerce. This was an increase of 22 per cent over the 45,597 units shipped in April and only 157 less than the May shipments of 1947.

May shipments of 30,595 solid fuel furnaces were 32 per cent above the number shipped in April. Gas fired furnaces, 13,617, were 9 per cent up and oil fired, 11,261, 11 per cent higher. Month's end inventory of warm air furnaces for May was 107,068 units, a decrease from stocks on April 30th.

During the first five months of the year 223,270 warm air furnaces have been shipped. This compares with shipments of 315,775 units in the same period in 1947.

Southern California Home Show

"OUTSTANDING CONSTRUCTION EXPOSITION ever held in Southern California," was the appraisal given the Third Annual Home and Building Exposition of Southern California, held in the Los Angeles Pan-American Auditorium June 10 to 20, when the event closed its doors, by President Milton J. Brock, who is also President of the National Association of Home Builders. The show also registered the biggest single day in the history of the event with nearly 15,000 in attendance Friday, June 18.

With a total attendance of 125,894 persons, the exposition registered an all time attendance record, Brock said. More than 200 exhibitors presented a display which for variety, color, and public appeal exceeded any previous such affair in the West. This opinion was borne out by the enthusiastic reaction of both exhibitors and the spectator public.

Exhibitors reported that it was not only a big crowd, but a responsive crowd. People came not only to see, but to buy with a view to renovating, improving and expanding their homes, or building new homes. One spectator reported that he used the event as a showcase to help him decide what he wanted to renovate his home, and purchased more than \$6,000 worth of materials, processes, and services while making his tour of the construction exposition.



ANNUAL average volume of new residential construction is an important part of the market for heating systems in your community. You can easily compile these figures with the aid of your local building department. Building permits can lead you to heating sales.

DAVID MARKSTEIN
New Orleans, La.

Measure Your Market

The most logical approach to the planning of a sales campaign is to determine how many people are potential customers for you and just what they are able and willing to buy.

HOW large is your market? Are you making all of the sales that you might make could you know exactly what people want to buy? Or are your sales not as high as they might be?

Big manufacturers have found that they cannot sell efficiently without knowing the answers to these and other questions. They need to know all about the prospect before they can plan to sell him. The same system of measuring the market can help to put many extra dollars in your pocket every week. If you know your typical customer—if you know what he buys and what sort of person he is, you can slant your selling appeals and policies around this knowledge.

The result will be that you make no waste effort. *Everything you do to create sales actually does increase your volume*—when you base your selling efforts on a sound knowledge of your market. You can't miss.

"But," ask many *Indoor Comfort* dealers and sheet metal contractors, "How can I do a job like this? The big manufacturer can—sure; but he has adequate capital behind him, and he can hire the experts who know how to do such a job. How is it possible for a man whose operations are the size of the average contractor's to measure his market?"

Actually, market measurement is not the complicated, expensive thing that most contractors believe it is. A few spare-time hours' work is all that you need. Market measurement can be simple—and still be so accurate that everything you do when you're guided by it can't fail to click.

Let's first look at what you can do with a knowledge of your market. Market is a complicated-sounding word, but its meaning is simple. A market is nothing but people—people with the desire and the money to buy what you have to sell. To the big manufacturer, a market may be all of the United States. A wholesaler's market may be a state. Yours is probably a city, or a part of a city.

How It Helps

Market measurement can help you in these ways:

(1). As a selling guide. You learn what buyers want, and their characteristics, personality traits, incomes, and groupings. Armed with this important knowledge, you can custom-tailor your advertising and selling appeals to come in on the beam. The beam is a knowledge of the customer's personality and his wants. If you plan around what you know he wants, you'll ring up vastly bigger profits.

(2). As a guide in your buying. If you know who your prospects are, what they want, and how many there are, you can plan scientifically. You can gauge with accuracy how much you can expect to sell. You can buy all you can sell—and no more.

In guiding your buying, this knowledge of the customers and their wants helps you to pick leader offer-

ings that will truly bring big volume. There is no hit or miss guessing when you're guided by knowledge rather than intuition.

(3). Uncovering profit possibilities. Sometimes an obscure job turns out to have considerable demand. An example of this happened recently to a Western heating contractor. Using market measurement for the first time, he uncovered a possible demand for what had been a slow-mover for many years.

He inserted one small newspaper ad and started his



stock moving more rapidly than it had in some time.

He acted on the knowledge acquired by studying his customers and their needs, discovered a new source of profits.

(4). To judge your competitive position more clearly. Market measurement tells you the total volume all heating companies do. It tells you the total volume that can logically be done. It tells you how much you are doing in proportion to the rest of the trade. Is your percentage larger or smaller than it should be, considering the relation of your firm to the total number in your community? If it's less, then you're in a bad position. Your competition is getting too much ahead of you. If it's more, you're doing a good job and heading for growth.

If market research tells you that there is a potential demand larger than the present volume, then you know about an untapped sales well that your competition does not know. You're in a position to steal a march on other contractors.

(5). Making long range sales promotion plans. Market measurement tells you where the demand is, and who wants what. Knowledge of these important factors is an important aid in planning where you will be a year or two years hence, planning so that your plans come off, exactly as you have blueprinted them.

These are the advantages you can realize by measuring your market: finding out how many prospects you have, what they want, and who they are. How can you gather this information easily?

You must find out:

How many people there are in the community (the market).

What percentage of these people are actual customers.

What percentage should be customers (in other words, how many are prospects).

A picture of both the customer and the prospect—his income, his likes, his dislikes, his buying habits, etc.

One contractor in a mid-western city did this by using the local government statistics available at his county courthouse. A few hours' delving into the courthouse records gave him a good start on a sales promotion plan that clicked because it was based upon exact knowledge of his prospects.

The first factor—how many people in his market—he found out simply by looking up the total population of the community.

Government Aids

Next, he subscribed to studies made by the Department of Agriculture and the Department of Labor in Washington, and to pertinent data furnished him without charge by the Bureau of the Census. These studies told him the number of *customers*. They broke down sales into the amounts purchased by persons in each income group.

Now he knew something about his customer as a start. He had discovered how much heating work the customer making \$2500 per year purchased, and what the customer making \$4400 per year purchased, as well as the rough sums and percentages of the total sales dollar that customers in other income groups accounted for. Next, he had to discover how many of each income group were to be found in his city.

To learn this, he visited the county courthouse and looked into assessment records. From these, he found out the worth of every home in the community. He discovered, for example, that 40% of the homes were assessed at \$8500. He used his own good common sense to determine roughly the income of a person from the size of his home. That meant the people who lived in them made around \$2500 to \$3000 per year. The rule, he determined, would hold good at least ninety per cent of the time, whether the home was rented or whether it was lived in by the owner, since rental prices are set roughly by the value of the home or apartment rented.

Analyzing Incomes

By comparing the percentages of homes lived-in by various income groups with the total population of the town, this heating contractor brought out figures that showed him with fair accuracy how many people in his community made how much money. Comparing this breakdown of people's income with the figures furnished him by government departments, he then had a good picture of just how much heating work could be sold, and a good picture of the customer who bought it.

He knew just how to slant the advertising and selling appeals because he had a statistical picture of the customer and the home in which this customer lived. He knew his buying habits, he knew who bought, and the amounts he bought (on the average) each year. These things proved invaluable as a guide around which to plan his selling, buying and overall long range plans!

Knowing the prospect's buying habits to some degree from an analysis of the kind of home in which he lived, the contractor was next able to visualize the sort of things he wanted. Now he had a good picture of not only what the customer purchased, but what he might logically purchase if it were offered to him. In this way, the profit-making possibilities of many once-neglected things were brought to the fore. New ways in which to make added profits were opened up.

The chambers of commerce in every community and the colleges of commerce of many state universities are good places in which to seek statistics about your local market. Often, they can furnish, ready-made, the sort of breakdown that the contractor above found through his own efforts.

Too, statistical offices such as state university colleges of commerce often issue monthly bulletins showing the volume of sales in various sections of the state. By comparing the overall trend with the trend of your own volume, you can discover whether you are doing better than your competitors, or doing worse than they are. You can discover this in time to do something about it if your business is slipping, or to push your advantage if you're leading the pack.

Your records are worth digging into. From them, you can learn a great deal about your own customer. If you dig deep enough, you can discover exactly what is selling. This gives you an invaluable tool to use in your own planning.

More is needed, however, than the kind of quick look-see that every heating contractor does anyway as a matter of course. Sometimes it turns out that the lines you thought were profitable are not.

Here's how one contractor did it: He broke down the

sales of each heating job into percentages of his total sales volume. If something sold to the tune of \$1000 in a year, and the firm did \$100,000 altogether during the same year, it was obvious that the particular work represented 1 per cent of the volume.

He discovered an amazing thing: That several things he had thought profitable each represented only a negligible per cent of the total sales. It was a simple step, then, to eliminate these and concentrate instead on what was selling profitably.

How can market measurement be compared with the good selling sense of an experienced contractor? The man who has built his business to a profitable level by the exercise of good business judgment is understandably cautious about taking on some newfangled scheme when his own judgment has proven so successful.

Market measurement, however, is not by any means a substitute for good merchandising judgment. Instead, it is a guide to the smart operator, furnishing him facts as a basis on which his proven judgment can build plans.

It has been likened to the use of medical laboratories. Once, physicians trusted their own experience implicitly in making diagnoses. Today, the more successful doctors are the first to send their patients to laboratories to have tests made. They are the first to call for X-rays and for other exact means of diagnosing conditions. The information they gather by scientific analysis is used to further the judgment they have acquired through years of practice. It furnishes guide posts to help them to the right diagnoses.

In exactly the same way, a knowledge of his prospect can help the alert *Indoor Comfort* dealer to make sound merchandising decisions. Guesses can go wrong, but when you *know* what you're doing, you can't miss.

Business Management Quiz

ARTHUR ROBERTS
Pompton Lakes, N. J.

Quiz programs are popular on the radio networks. Those who answer correctly often get lush gratuities. Some contestants are stumped by the simplest questions and lose the pot of gold. Businessmen who assume that success is just a matter of buying and selling are equally barren of information on the simplest requisites of barter, and so, it would be well to give yourself a business management quiz occasionally. Try to answer these questions to the best of your ability, then turn to page 78 and give yourself 10 for each question answered correctly. Grade yourself by the result, 60, fair, 70, good, 80, very good, 90 to 100, excellent.

QUESTIONS

- 1:—What is departmentization and how handled?
- 2:—What is the current ratio?
- 3:—What are reserves?
- 4:—What is a fixed expense?
- 5:—What is a variable expense?

- 6:—What is working capital?
- 7:—What is an accrued expense?
- 8:—What is a Petty Cash Fund?
- 9:—How are bad debts handled on the books?
- 10:—What are experience figures?

ANSWERS

1:—Departmentization is a breakdown of sales and cost of sales, overhead expense and net profit, according to the different departments in a business, over-counter sales of accessories, heating equipment sales, air conditioning sales, service and installations. These general classifications may be broken down further to sales of oil burners, stokers, furnaces, repairs, yearly service by contract, etc. The books must be kept according to departments and all transactions charged accordingly. By this means, the net profit in a department is ascertained so that the management can determine the departmental profit or loss.

Departmentization assures maximum managerial efficiency because it enables a management to trace profit or loss to source, a difficult objective when profit or loss is recorded for the business as a whole.

2:—The current ratio is a yardstick of liquidity and determinable by means of the balance sheet or financial statement. It is a ratio computed by comparing current assets to current liabilities. Before the war, if this ratio was 2 to 1, the liquid position of a business was considered satisfactory. Because of higher costs and taxation, commercial counselors advocate a ratio of $2\frac{1}{2}$ to 1 or 3 to 1 today, but before computing this ratio, it is necessary to test the accounts receivable and inventory for "dead spots". All doubtful accounts should be omitted, unsalable inventory should be deducted and charged off to "Loss on Inventory". Unless this is done, the assets are "watered", the balance sheet will show a better current ratio than actually exists.

Regardless of net worth, a business, to be sound, must be in a good liquid position, consequently, the current ratio is important and should be watched carefully.

3:—Reserves are created by charging profits and crediting reserve accounts for depreciation on equipment, business buildings, office furniture, trucks, etc. Reserves do not represent cash, as so many businessmen assume. The books may show large reserve but the business may have a floating debt or deficit. This is because profits are never in cash, and so, although a part of net profit is credited to reserves, this credit on the books does not represent actual cash. The actual cash that a business possesses is recorded on the cash accounts. When actual cash is set aside to cover depreciation or any other contingency, it is a sinking fund, and shows on the asset side of a balance sheet, whereas, the reserve is a liability on the liability side, although some accountants deduct the accumulated reserve from the fixed asset it covers on the asset side to make it easy to determine the unrecovered cost of that asset to date.

4:—A fixed expense is an obligation that cannot be cut, such as mortgage interest, depreciation, insurance, rent, etc. Because it usually remains fixed in good times and bad, a fixed expense should be contracted with care and forethought, otherwise, the fixed burden carried without distress in good times may play havoc in bad times. Ratios differ with the business, but in general, when the fixed-to-variable ratio is 1 to 5, a business is usually in the safety zone.

5:—Variable expenses are expenses that can be cut

in times of fewer sales. These are the expenses to watch in good times and bad. As sales increase, variable expense will increase but not in the same ratio. The fixed expense ratio does not increase with sales. It decreases. When sales decrease, the fixed expense ratio increases.

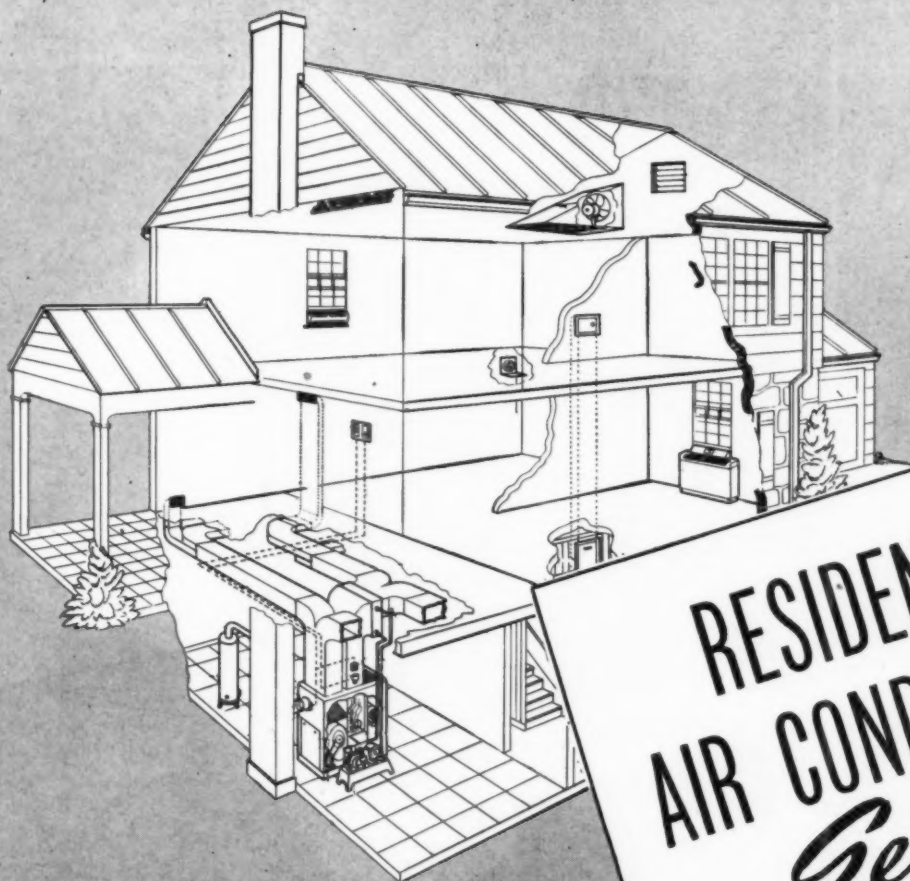
6:—Working capital is the difference between current assets and current liabilities. Current assets should exceed current liabilities. If the figures are reversed, a business has a floating debt, a serious condition even when the books show heavy holdings in fixed assets and a substantial net worth. Most businesses have increased their working capital since pre-war years, in some cases, 50 per cent or more. The businessman doing business with the same working capital ratios as in prewar times is not in the best financial condition today because higher costs and higher taxes require a business to maintain a higher ratio of liquid funds. At this time, with currency plentiful and business volume high, a prewar ratio on working capital may not appear troublesome but a recession may create difficulties if high costs and high taxation continue or if a business has obligated itself to a high fixed expense through expansion of facilities.

7:—An accrued expense is an obligation not paid at the time an accounting period is terminated. This period may be a month or a year. Too often, accruals are not considered when preparing business statements, giving an erroneous idea of profit, loss or net worth. Tax is an important accrual. It is such a big expense today that businessmen should figure all taxes due, Federal, State and local, crediting the tax authorities with the amounts due and charging the proper tax accounts to date. When a profit and loss statement is prepared the income tax should be deducted from the net profit to arrive at the pocket-profit. Omitting accruals for tax, interest due, salaries, etc., throws monthly comparative analysis out of focus because accruals some months are higher than in other months and if not charged to the proper accounting periods, they distort the results.

8:—It is advisable to pay all outgo by check because this simplifies and certifies to the accuracy of recordings but on small cash outlays it is usually more convenient to pay in currency. However, a cardinal rule of good accounting prohibits making these outlays out of current cash income and so an accounting artifice, known as a Petty Cash Fund, is created whereby a check is drawn to Petty Cash and charged to this account, the money placed in a cash drawer, small pay-outs from this fund settling petty obligations, the cash replaced with slips listing the withdrawals. When the fund runs low, it is replenished with another check drawn to Petty Cash, the slips removed and charged to the proper accounts in the books, and the same process repeated. Many businessmen lose deductions on their tax returns and get a distorted idea of profit because they forget to enter all cash pay-outs. They use their pants' pockets for a teller's cage. The Petty Cash Fund minimizes this hazard.

9:—Bad debts may be charged off directly in the year they are ascertained worthless or by the reserve method whereby a deduction from gross income is

(Please turn to page 170)

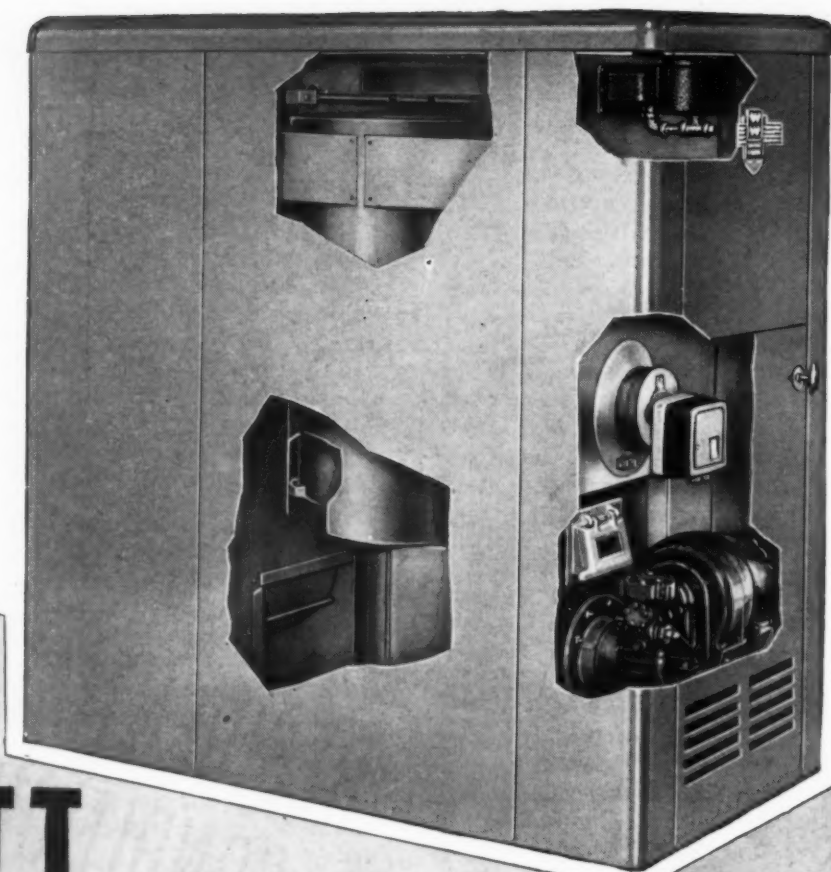


RESIDENTIAL AIR CONDITIONING *Section*

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FOR HOMES AND SMALL BUSINESSES

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WHAT'S
UNDER
THE CASING
THAT
COUNTS

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Correct Practice In Oil Heating

Part XIII *Combustion Testing—Its Importance & Techniques— Combustion Defined—Use of Testing Instruments.*

By J. J. Mirabile
Delco-Heat Division
Elliott-Lewis Co., Philadelphia

DURING the past 25 years there has been much discussion about combustion testing and its value as a gauge of combustion efficiency. Many service men today are using modern testing methods but some are not familiar enough with the combustion process to know what to do when the carbon dioxide content of the flue gases is low. Also, many installers continue to judge combustion by observations, such as:

1. Looking at the flame and judging combustion from its color and the amount of haze over the fire.

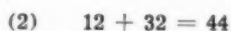
2. Spitting on the smoke pipe. If it sizzles and rolls off, the stack temperature is considered too high.

3. Holding a lighted match close to a cracked opening, such as the inspection door. If the flame blows outward, it indicates a lack of draft; and if it draws inward, ample draft.

Combustion testing itself does not insure efficient performance unless something is known about combustion—*what is taking place inside the furnace*. It provides data from which combustion efficiency can be accurately estimated and compared with a desirable standard. If efficiency is lacking, the data becomes a reference and guide for subsequent adjustments. Only by testing and adjusting can high efficiency be attained. Rule of thumb methods were tolerated in the abundant past, but now when fuel oil must be conserved and operating costs have risen, the flue gas analyzer, draft gauge, and stack thermometer have become accepted instruments to correctly adjust an oil burner.

Chemistry of Combustion

If pure carbon is burned in the presence of pure oxygen, the product of the chemical reaction is carbon dioxide and indicated by the simple equations:



Equation (2), molecular weights, establishes the weight ratio of the two elements entering into the simple combustion equation. That is, 12 units of car-

bon combine with 32 units of oxygen and form 44 units of carbon dioxide. Thus, burning 1 lb of carbon requires

$$(3) \quad 1 \times \frac{32}{12} = 2.667 \text{ lbs of oxygen}$$

for perfect combustion.

Similarly,

$$(4) \quad 1 \times \frac{44}{12} = 3.667 \text{ lbs of carbon dioxide}$$

is the product of combustion.

Since nitrogen has not entered into the equations at this point, a flue gas analysis would show 100 per cent carbon dioxide by volume. However, in practice it is necessary to obtain oxygen from the atmosphere which is largely a mixture of nitrogen and oxygen:

	Per Cent	
	By Weight	By Volume
Nitrogen	76.8	79.1
Oxygen	23.2	20.9

The nitrogen does not react in the combustion process but its large percentage in the atmosphere necessitates a larger quantity of air in order to get the required amount of oxygen for combustion. Since air contains 23.2 per cent oxygen by weight, combustion of 1 lb of carbon requires

$$(5) \quad \frac{2.667}{.232} = 11.5 \text{ lbs of air}$$

to obtain the necessary 2.667 lbs of oxygen.

Subtracting the weight of the oxygen (equation 3), which combines with the carbon, from the air, the difference of 8.833 lbs represents the weight of the nitrogen that passes through the furnace and is present in the flue gases.

Multiplying the weights of the nitrogen and carbon dioxide (equation 4) by their specific volumes, 13.43 and 8.54 respectively, the perfect combustion of 1 lb of

carbon in the atmosphere yields the following products in the flue gases:

	By Weight	By Volume	
	Lbs	Cu Ft	Per Cent
Nitrogen	8.833	118.6	79.1
Carbon Dioxide	3.667	31.3	20.9

Influence of Nitrogen

Fuel oil contains both carbon and hydrogen in varying percentages and these account largely for its weight and heat value. Sulphur, moisture, nitrogen, oxygen, and sediment are present in small percentages and contribute negligibly to its heat value. The hydrogen requires oxygen for its combustion and so must be considered when estimating the oxygen required for the complete combustion of fuel oil.

When hydrogen combines with oxygen, the product of the reaction is water vapor:



The ratio of the molecular weights shows that the combustion of 1 lb of hydrogen requires

$$(8) \quad 1 \times \frac{32}{4} = 8 \text{ lbs of oxygen.}$$

Selecting a fuel oil composed by weight of 85 per cent carbon and 12.5 per cent hydrogen, the oxygen for theoretically perfect combustion of 1 lb is determined from equations (3) and (8):

$$(9) \quad (.85 \times 2.667) + (.125 \times 8) = 3.267 \text{ lbs of oxygen}$$

or,

$$(10) \quad \frac{3.267}{.232} = 14.08 \text{ lbs of air.}$$

Subtracting the weight of the oxygen (equation 9), which combines with both the carbon and the hydrogen, from the air, the difference of 10.833 lbs is the weight of the nitrogen.

From equation (4),

$$(11) \quad .85 \times 3.667 = 3.12 \text{ lbs of carbon dioxide}$$

are formed from combustion of the selected fuel oil.

It will be noted in equation (7) that the combustion of 1 lb of hydrogen produces 9 lbs of water vapor. Since 1 lb of the selected fuel oil contains 12.5 per cent hydrogen, the water vapor present amounts to 1.125 lbs. Thus the flue gases contain 10.833 lbs of nitrogen, 3.12 lbs of carbon dioxide, and 1.125 lbs of water vapor. The water vapor condenses to a liquid in the flue gas analyzer and its presence as a liquid is neglected because its volume is small.

Thus, the theoretically perfect combustion of 1 lb of the selected fuel oil yields the following gases when aspirated into the analyzer:

	Weight	Volume	
	Lbs	Cu Ft	Per Cent
Nitrogen	10.833	145.5	84.6
Carbon Dioxide	3.12	26.6	15.4

Light fuel oils burned in residential oil burners are

assigned a carbon dioxide content approximating 15 per cent by volume of the flue gases. This percentage would not be realized under practical conditions. There is no assurance that each particle of oil will receive its correct amount of oxygen unless an excess of air is provided.

As the atomized oil enters the combustion chamber it is heated and forms a gas which readily burns in the presence of oxygen. If there is not enough oxygen or if the theoretically correct amount does not thoroughly mix with the oil-gas, only a small percentage of the heat value will be released in the combustion zone. On the other hand, a high percentage of excess air increases the volume and velocity of gases through the furnace and allows little time for the deposit of heat on internal surfaces. This results in high stack losses. It is necessary to compromise between these two conditions by supplying a minimum amount of excess air. This insures complete combustion and at the same time keeps stack loss down to an irreducible minimum.

There is a direct relationship between the amount of excess air supplied for combustion and the amount of carbon dioxide in the flue gases. Since the flue gases are diluted by the amount of air supplied in excess of that required for theoretically perfect combustion, excess air reduces the percentage of carbon dioxide. This can be determined in the combustion chart, Fig. 1, which accompanies this article.

Therefore, to maintain a high CO_2 , the quantity of air going through the furnace must be reduced. No air should enter the furnace unless it passes through the oil burner. Any air that enters through cracks, crevices, etc., will be heated to stack temperature and will lower the CO_2 and overall efficiency.

The percentage of CO_2 in the flue gases is measured by a CO_2 analyzer. A definite quantity of the gases is aspirated into a chamber after which it is sealed and passed through a solution that absorbs the carbon dioxide. The difference in volume is read in direct percentage.

Use of Draft Gauge

An inclined draft gauge is used in combustion testing to measure the difference in pressure between the atmosphere and the chimney. A draft reading at the fire door immediately above the flame—overfire draft—reveals excess, normal, or deficient draft. An excessive draft affects the economy of the heating system by pulling the gases through the furnace more rapidly than necessary. Also, during periods when the burner is off, large volumes of air are drawn through the furnace cooling the internal surfaces and wasting the heat up the flue. A deficient draft may mean that at times there is a positive pressure inside the firebox, causing objectional products of combustion to escape. Normal overfire draft insures positive passage of the flue gases to the atmosphere.

The smoke pipe draft, taken within about one diameter from the smoke pipe connection to the furnace, is useful in locating obstructions to draft. Similarly, the chimney draft, taken at the smoke connection to the chimney, indicates the draft available at that point. If there is a lack of draft at the chimney, the draft gauge quickly locates the source of trouble. Sufficient draft at the chimney but a lack at either the

smoke pipe connection or the fire door would indicate obstructions between either point, such as an excessive accumulation of soot. The difference between two points is a measure of the resistance between points.

Use of Stack Thermometer

A stack thermometer indicating temperatures as high as 950 to 1000 F may be inserted about 4 in. into the smoke pipe and read after the mercury stops rising. Its reading, after subtracting furnace room temperature, is necessary in determining combustion efficiency as indicated in the chart showing the losses in the flue gases for different temperatures.

A high stack temperature may indicate 1) overfiring, 2) insufficient heating surface, or 3) excess air.

Analyzing Combustion

Drill a $\frac{1}{2}$ in. hole in the smoke pipe about one diameter away from its connection to the furnace. This hole should be between the furnace and draft regulator and

remove nozzle and clean. Be sure nozzle is correct in size and angularity.

Check for air leaks at all joints around cleanout doors and other joints where air may enter. Use a candle to find leaks and seal.

Start the burner and take another set of readings. If CO_2 continues too low, check the height of the nozzle above the floor of the combustion chamber. If too low, excess air will be needed to get a clean fire.

Does the oil flame strike the sides of the combustion chamber? Is the combustion chamber correctly sized for the nozzle and its angularity? If oil impinges against the sides, excess air is being used to clear up the fire. The oil must be burned in suspension without striking any part of the combustion chamber. Do not open the air shutter to shrink the flame. Install a correct nozzle.

It may require several adjustments and recordings of combustion data before satisfactory performance is realized. A final recording such as the following will

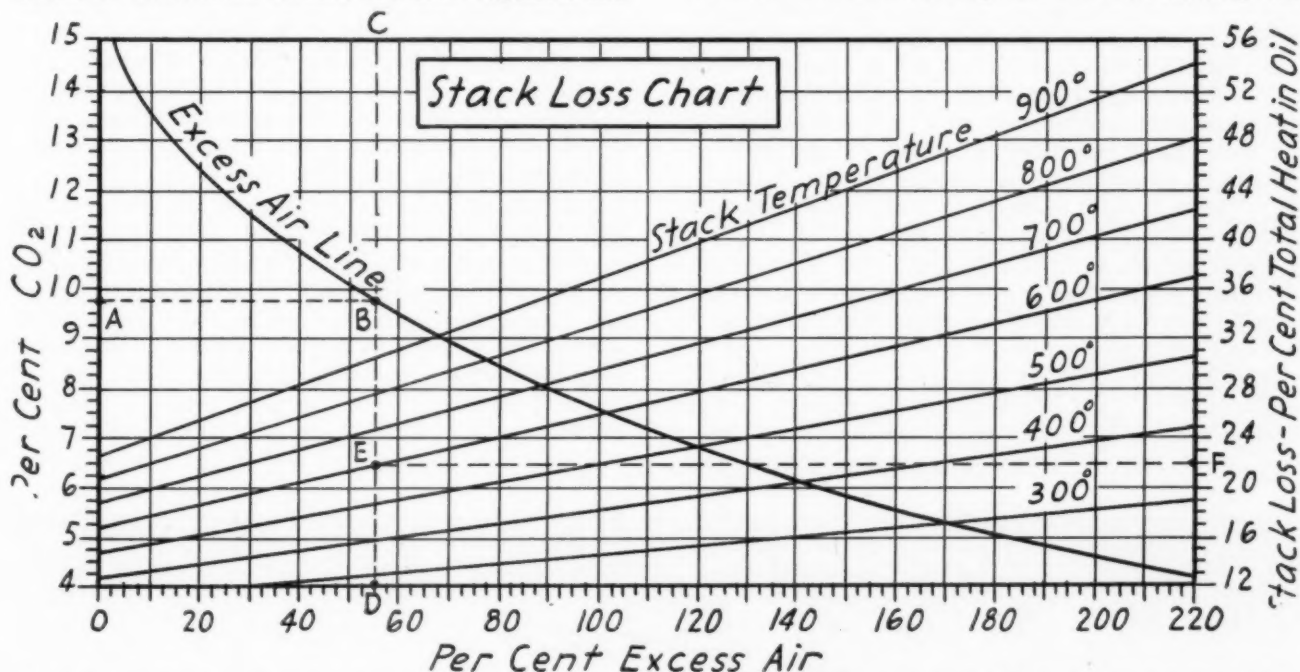


Fig. 1. To use this chart: First, find the proper CO_2 percentage on the lefthand side of the chart (point "A," indicating 9.4 per cent CO_2) and draw a horizontal line to the Excess Air Line. (Marked "B.") At the intersection of these lines, draw a vertical line ("C" to "D") on the chart. The scale at the bottom of this line indicates the percentage of excess air.

far enough away from the draft regulator so basement air will not affect the thermometer or be aspirated into the CO_2 analyzer.

Take a draft reading at the smoke pipe connection and record. After noting the overfire draft and stack temperature take several CO_2 readings and record an average if they vary considerably.

Assume the following has been recorded: smoke pipe draft, .08 in.; overfire draft, .04 in.; stack temperature, 600 F; CO_2 , 6 per cent.

From the combustion chart (Fig. 1) this indicates 70 per cent efficiency and about 140 per cent excess air.

To increase the CO_2 reduce the excess air by partially closing the air shutter on the oil burner. Reduce the overfire draft to .02 in. by adjusting draft regulator.

Inspect the oil flame. If atomization is not uniform,

Second, locate the point at which the vertical line just drawn intersects the proper stack temperature line (point "E" indicating 600 F stack temperature). From this intersection draw a horizontal line to the righthand side of the chart, where the stack loss may now be ascertained. (Point "F", 22 per cent stack loss, corresponds to 9.4 per cent CO_2 and 600 F stack temperature.)

indicate all factors have been investigated and corrected: smoke pipe draft, .04 in.; overfire draft, .02 in.; stack temperature, 500 F; CO_2 , 11 per cent.

From Fig. 1 this indicates 82 per cent efficiency and about 40 per cent excess air.

Low CO_2 is caused by:

1. Improper flame shape for combustion chamber.
2. Poor air cone and air diffuser arrangement.
3. Nozzle position not correctly positioned in relation to air cone and air stabilizer.
4. Air leaks into furnace.
5. Excess air from burner fan.
6. Excessive draft.
7. Incorrect or defective nozzle.
8. Furnace underfired.

(Please turn to page 174)

New Gas Making Process

E. G. deCoriolis, Director of Research
Surface Combustion Corporation, Toledo, Ohio

EARLY in January of this year the first catalytic cracking plant ever to attain full commercial operation for a utility, began delivering gas to the distribution mains of the Long Island Lighting Company. While it is important that this plant has helped this utility to meet its peak load, the installation represents far more than this.

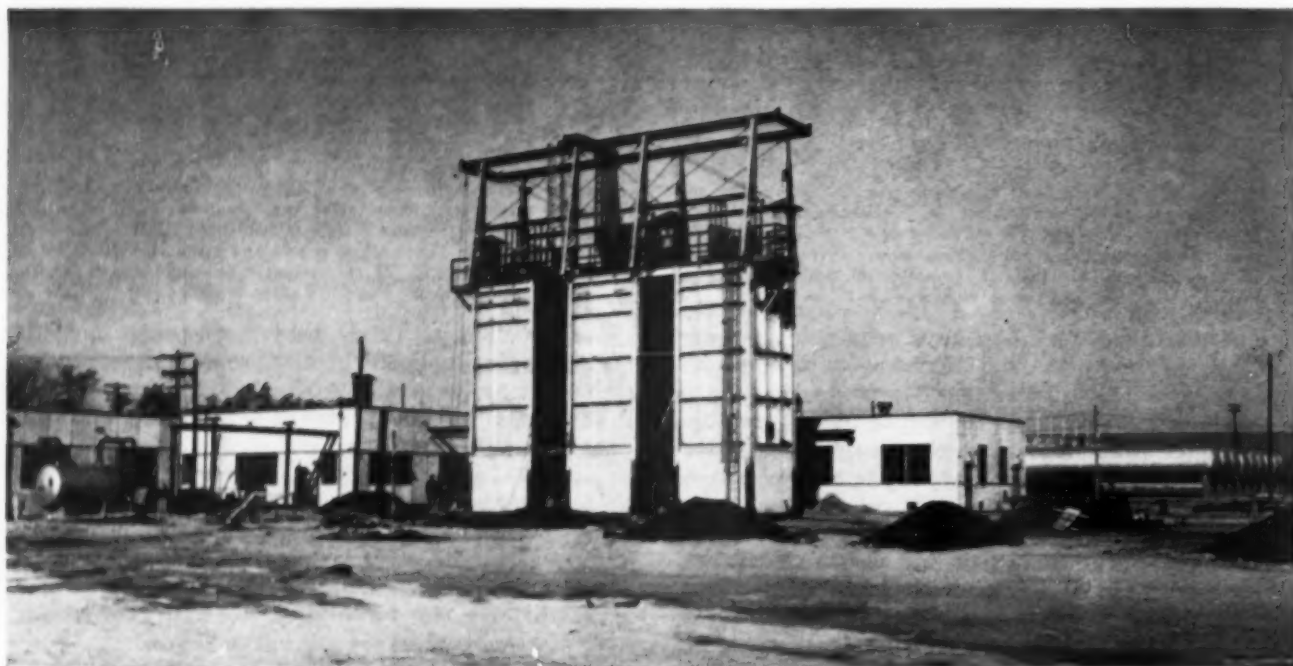
The process offers a new approach to the solution of the peak load problem, not only for gas utilities but for many large industries as well. In its flexibility of operation, its size and compactness, and its flexibility in the kind of gas it produces lie new economic factors of immense potential significance.

To appreciate fully the economic factors involved and their implications, a brief description of the plant and the process it utilizes will show its applicability as a source for gas as a fuel.

The principle item of equipment is the catalytic cracking furnace which breaks down or cracks a hydrocarbon vapor into a fixed gas. It consists of a refractory-lined chamber, structurally reinforced and built

outdoors on a foundation. From the roof structure of the furnace are suspended a number of heat-resisting alloy tubes, the ends of which project both above the furnace roof and below the furnace floor. Disposed about this floor are a number of upward firing burners. Adjoining the roof are flues which may be either directly connected to short stacks equipped with automatic damper controls or to a refractory-lined breeching for connection to a waste heat boiler. The burners operate on a light fuel oil and the whole firing system is under automatic pyrometric control.

The heat-resisting alloy tubes are filled with a refractory-supported catalyst and are connected at the lower end to a system which feeds an automatically proportioned mixture of hydrocarbon vapor, steam and air. This mixture rising through the catalyst bed dissociates the vapor into mainly hydrogen and carbon monoxide to form first a blue gas of definite and controlled composition, which at Long Island is a gas of 240 Btu content. The hot gas issuing from the top of the cracking tube is then cooled, after which it is



Battery of three Surface Combustion catalytic cracking furnaces producing gas for delivery to mains of Long Island Lighting Co., Riverhead, Long Island, New York. Furnaces are 30 ft in height. Superstructure carries

crane for installation of cracking tubes. Notice absence of gas holder. Propane storage cylinders in right background. Building houses boiler and compressor rooms, control room and plant office.

automatically cold-enriched by the further addition of hydrocarbon vapor to a definite and controlled composition. This cold-enriched gas for this plant is held at 540 Btu per cu ft.

An essential of the plant is a control house in which are installed all the instruments which help to make it completely automatic. In addition, there are the usual boiler, compressor and vaporizer accessories, as well as the important item of feedstock storage. At Long Island the base feedstock is propane, a liquefied petroleum gas which is stored in the usual horizontal, cylindrical tanks.

Other Feedstocks

Since completion of the installation at Long Island, the process has been improved further by making possible the use of heavier hydrocarbons such as "wild" gasoline, commonly called 26 RVP (26 pound Reid Vapor Pressure gasoline) and also straight run gasoline. The straight run gasoline is a refinery product which can be secured from most local refineries and represents the first cut of the lighter hydrocarbons. It is a very low octane fuel and cannot be used in automobiles without blending.

The addition of these fuels to the list of raw materials available for catalytic cracking greatly increases the scope of the process and simplifies the problem of storage. This strikes a responsive chord with utilities which have already installed propane storage for peak load use. They well know the cost of such storage facilities, as well as the difficulties surrounding their location, particularly where large urban centers are concerned. Furthermore, it may become possible that the local refinery in many cases will prove the most suitable site for storing, during the summer, the fuel required for winter use.

Compactness of Plant

In addition to their simplicity of operation, plants of this type possess the advantage of unusual compactness. Ground space of the catalytic cracking furnace is comparatively small. A plant now being designed for an eastern utility and having a capacity of five million cubic feet per day occupies a ground area of only 18 by 22 ft for the furnace. If propane is used as the feedstock, only a few square feet are required for a vaporizer house. When using gasoline, the area occupied by the handling equipment would be but 15 by 20 ft. No buildings or enclosures are required except for a control room which may be simply housed on a one-story structure some 20 by 50 ft.

Nor are storage holders required for the finished gas. The vaporized hydrocarbon passes through the plant, is gasified and after cold-enrichment flows directly into the low pressure distribution system. If the gas requires distribution at higher pressure, it is fed directly into a compressor to be boosted to any desired pressure. By suitable controls the entire plant can be made to float on the line, automatically increasing or decreasing production with the fluctuation in demand.

Flexibility of Plant

Combined with these many advantages is one which possibly surpasses all others in commending the catalytic cracking furnace to any gas utility facing a peak load situation. At Riverhead, Long Island, where the

new plant is located, a gas of exactly the characteristics of the gas manufactured by Long Island Lighting Company in its other plants some sixty to seventy miles distant is produced. Between them stretches a long high pressure main serving towns and villages along the way. It makes no difference to the appliances on the entire distribution system whether the gas comes from Riverhead or from other plants of the system.

Cracked Gas Is Cleaner

The catalytic cracking furnace is a gas manufacturing plant which converts a carbonaceous raw material into a fixed combustible gas. (In this it partakes of many of the characteristics of other well established gas-making processes, such as coke oven gas, water gas and oil gas, with this one outstanding exception: It manufactures a clean odorless gas requiring no purification and leaving in its wake no by-product such as tar and sulphur nor other hard to dispose of effluents.) The plant is entirely smokeless in operation. It is also a process wherein the plant floats on the distribution system with no intermediate storage holder and it can, therefore, be located in any convenient site, even adjoining suburban areas, from which originate the sharpest peaks and which are usually located at points most distant from the existing production plants.

Cracked Gas and the Natural Gas Industry

The catalytic cracking furnace can be made to serve those territories now distributing pipeline natural gas. The principal difference is that the proportions of hydrocarbon vapor and steam have to be modified to produce a blue gas of low gravity. This is to compensate for the necessary addition of greater amounts of enriching vapor in order to produce a final gas of high heating value. Normally natural gas will average 1000 Btu per cubic foot. Therefore, a blue gas is made which is high in hydrogen content so that the final enriched gas of 1000 Btu does not exceed .76 specific gravity which compares with the .62 specific gravity of natural gas. Such a gas is far more interchangeable with ordinary natural gas than a mixture of air and propane, the gravity of which is 1.2.

Cracked Gas Standby Plants

The importance of this development, and other methods of taking care of the peak load requirements, to gas utilities and industries grows out of the problems which have developed since the beginning of the war.

While problems of increased demand and shortage of critical materials (principally steel and pipe) have been common to all gas companies whether distributing manufactured, mixed or natural gas, they are most serious in the natural gas territories because of both the proposed expansion of the territory served by natural gas and the increased demand in the territories already served.

In areas served primarily by natural gas (either straight or mixed) both utilities and industries are faced by these factors:

There has been a great trend in the past ten years to automatic heating in homes, stores and factories. This is evidenced by the large increase in sales of gas, oil and stoker equipment. In this field, gas is a preferable fuel, due not only to its cleanliness and convenience

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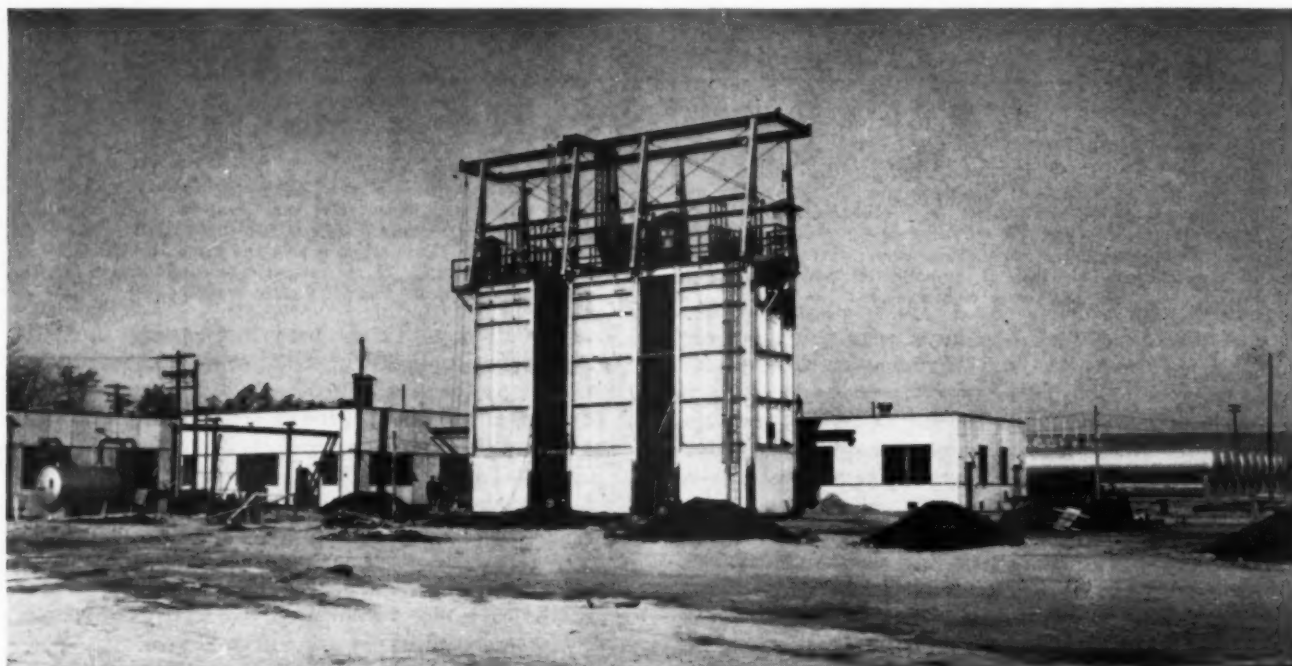
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In areas served primarily by natural gas (either straight or mixed) both utilities and industries are faced by these factors:

There has been a great trend in the past ten years to automatic heating in homes, stores and factories. This is evidenced by the large increase in sales of gas, oil and stoker equipment. In this field, gas is a preferable fuel, due not only to its cleanliness and convenience

but also to the fact that in most areas it is now cheaper to use. If this condition continues over any period of time then we can visualize a constantly increasing use of gas for house heating.

While there is no scarcity of natural gas in the fields, the gas distributing and pipeline companies have not been able to meet present demands because of curtailment of expansion during the war and their inability to get delivery on pipe, compressors and other critical materials. This has resulted in the curtailment of gas service to industry during the mid-winter and the almost complete stoppage of an expansion in the domestic heating load by restrictions imposed by Public Utility Commissions.

While pipelines have been authorized by the Federal Power Commission totalling some 20,000 miles, delivery on much of this runs beyond 1951. Furthermore, unless restrictions on both new industrial and domestic load are continuously maintained to a degree which protects the industrial service better than has been the experience since VJ Day, or the economics of gas heating are

materially changed by either or both of increases in gas rates and reductions in coal and oil prices, industry can anticipate interruptions in its service during the winter in favor of domestic users. Aggravating this condition is the philosophy that industrial use of gas is an inferior use as compared with the domestic use, and therefore many gas distributing companies have no dependable non-interruptible rate for industrial gas service.

The conclusion seems inescapable at present and for the next few years that while the gas utilities are proceeding as expeditiously as possible to expand their service, industry is going to have to use its own resources in providing standby capacity if it expects to operate continuously.

The gas cracking process gives a new valuable production method to the utilities to increase their capacity to handle peak loads and to industrial plants for standby capacity for any proportion of their requirements.

OPEN FOR DISCUSSION

Furnace Design for Large Loads

● This article by Mr. Campbell supplements the one we published in June AA, page 76. With the growing popularity of warm air heating in larger installations a discussion of this type is very valuable—Ed.

FURNACES for heavy duty work or large furnace-fan systems should be designed differently from residential type furnaces. When the University of Illinois developed from tests the formula for design of residential furnaces, 20 sq ft of heating surface to 1 sq ft of grate area was established. This ratio is based on the fact that a furnace in a residence, large enough to operate as it should, will operate somewhere close to capacity for only a short period each morning and coast the remainder of the 24 hour period. Under these conditions, if larger ratios of heating surface are used, draft troubles may arise in some cases.

However, it has been recognized that one of the differences between residential and heavy duty furnaces is that the latter is apt to be used under conditions where it will be fired hard for longer periods. This means there must be more heating surface to transfer the heat from the hot gases into the air of the building or too large a portion of heat will go up the chimney. So, according to the *ASHVE Guide*, heavy duty furnaces should have not less than 30 sq ft of heating surface to 1 sq ft of grate area and may go as high as 50 to 1. It is our practice to ship few furnaces with a ratio of less than 40 to 1 and we have not been troubled with faulty draft except where something is obviously wrong with the flue construction or size. Most of these furnaces are sold, of course, in

competition with steam heating and, in most cases, the architects provide flues of the sizes and heights specified by the manufacturers of steam boilers. Hence, in this field we have little trouble with poor drafts. This makes it possible to design furnaces with sufficient heating surface to effectively extract the heat from the gases before they leave the furnace.

The arrangement of heating surface in heavy duty furnaces is not standardized. Some have horizontal tubes arranged so the gases rise constantly as they flow to the chimney. Others take the gases down through a series of tubes. Being vertical, these tubes are self cleaning. Often the tubes are located so the air from the fan immediately wipes the tubes on entering the furnace giving a counterflow principle in the transfer of heat. This has been found to have considerable advantage from the standpoint of economy.

Another element in the design of heavy duty furnaces is the amount of combustion space. Residential furnaces have a relatively small combustion space, although that in steel furnaces is larger. The large combustion space in heavy duty furnaces makes for good combustion, helps toward complete combustion, minimizes smoke, and makes the furnace more durable under heavy firing.

The furnace man whose experience has been largely residential work is often heading for trouble for both himself and his customer unless he recognizes the differences between residential and heavy duty furnace equipment and the necessity for equipment designed to meet the conditions encountered in large buildings.

E. K. CAMPBELL

E. K. Campbell Heating Company
Kansas City, Missouri.

Fuel Oil Conservation

J. L. MINNER
Manager, Fuel Oil Department
Shell Oil Company

The following article is a speech that was presented before the New England Biennial Exposition of Oil Heat, Boston, Mass. Giving a brighter picture of the situation than previously available from the major oil companies, the full title was: *The Importance of Conservation of Fuel Oil to the Normal Growth of Our Industry.*

WE are all acquainted with the regrettable misunderstandings which have developed between a few burner manufacturers and dealers and a few oil suppliers during the past season. Each group has shifted responsibility to the other for headaches suffered by both industries because of the fabulous demand for petroleum products. I feel that both groups are somewhat to blame. Certainly the tremendous oil-heating expansion of 1947 was the result of public demand, rather than over-active merchandising by burner firms. And on the oil industry side, certainly an all-out effort was made to take care of the oil-heating public once its full needs were known. Because such misunderstandings exist, however, it is a good thing to get together as we are doing here today, talk over our mutual problems, and clear up some of the postwar fog that still confuses us.

Conservation and Dissatisfaction

My subject today is conservation, a shopworn subject familiar to all of you, but still timely and important. Last winter some skeptics maintained that you could not get the American people to conserve anything in peacetime unless you persuaded them by force through government regulation. The oil industry discovered otherwise. A spot check of direct accounts in one of our marketing divisions, towards the end of winter, disclosed that 82 per cent of our customers had cooperated in the conservation drive. Making adjustments for differences in degree days, we found that net savings of fuel for January over December amounted to 9.6 per cent, and for February, 13.4 per cent.

A New York City official recently reported that the city's public school system had reduced its fuel bills by \$2,628,676 in six years, despite rising prices and extended use of building during this period. He attributed this remarkable saving to a conservation program inaugurated back in the winter of 1940-41, and still in effect.

I am sure that most of you can cite similar case-histories proving beyond a shadow of doubt that conservation works. While the conservation drive last winter proved successful in saving fuel, however, I think the campaign also created many dissatisfied

customers—because it was based principally on fear. "If you don't save oil, you are going to be cold." That was the implication underlying some of the industry's ads, and literature last year. "If you don't save oil, the industry will be unable to spread supplies sufficiently to take care of every oil-burner owner."

I think it is time to stop trading on fear as the motive for making conservation work and, instead, launch a solid, constructive program. We want people to enjoy our products, we want them to like the oil business, and it is impossible to attain these objectives if we constantly "scare them." Let's use conservation to create happy customers—customers who will feel inclined to praise the oil and oil-heat industries.

Stress Economy

We can do this by stressing the money-saving factor involved in conservation, by convincing people that a little money spent for various repairs, and fuel-saving devices, can save them substantial amounts on their fuel bills. Seldom will your customer become irritated when you endeavor to show him how to save money. Naturally, if a homeowner is kept in a perpetual jittery state about the supply of his heat—one of the prime necessities of life—he does become irritated and dissatisfied.

Last year the heating season was well along before intensive, conservation programs were organized. Forward-looking companies are not making the same mistake in 1948. We, at Shell, started a constructive conservation campaign in April. At that time, we sent a letter to our accounts thanking them for their cooperation during the past winter and pointing out three steps that they can take now to conserve oil next winter.

Customer Recommendations

The first of these was: "Have your entire heating system surveyed for recommended improvements."

The second: "Have your burner completely overhauled, adjusted and cleaned by a competent oil burner service mechanic."

The third: "Have the soot and scale deposits removed from the heating surfaces of your boiler, or furnace."

We deliberately confined the program to these particular points to keep it as simple and inexpensive as possible, to lead our customers into making small expenditures which would result in important fuel savings. All of us know that savings amounting to as much as 20 per cent of the fuel consumed can result from simple repair jobs on the majority of burners now in use.

The letter I have just mentioned was the first of a series of letters which will keep our customers posted on the supply situation as it develops, and promote conservation.

Fall Campaign

Starting with early fall, we expect to launch an extensive campaign on thermostat settings, the phase of the conservation program that proved most effective last year. By getting the program underway in September, instead of at Christmas time, the industry should achieve even more satisfactory results in the coming season, than in 1947-48. Here again, we plan stressing the money-saving factor, not the fear factor, by pointing out that 10 per cent, or more, can be saved on heating bills simply by not overheating.

More important to burner dealers than any other plank in a conservation program is the replacement of the obsolete, and inefficient burners now used in many homes. We all realize a large potential market exists in the replacement field, but dealers in many localities have been handicapped in their efforts to handle it by unfavorable publicity on oil supply. I regard it as the petroleum industry's duty to restore public confidence in oil supply sufficiently to prevent oil burner replacement campaigns from miscarrying. Satisfying this market will mean highly effective conservation of fuel oil, and I am sure that dealers who actively go after this business will find that their suppliers will support them 100 per cent.

We, at Shell, have already taken steps to bolster our customers' confidence in next season's supply. I quote from a letter that our marketing divisions have just mailed to their accounts: "We are happy to inform you that the prospect for fuel oil supplies has improved, and barring a greatly expanded military demand, or some unforeseen difficulty, we expect to have enough fuel oil to meet your demand. It is still most important, however, that we conserve oil. Old, inefficient burners, of course, waste fuel. If your burner needs replacing, present forecasts of supply certainly justify your installing a new one now."

Replacements Holding Up

I am happy to note that replacement sales in New England seem to be holding up well. First quarter sales in this category totaled 5,287, as compared with 4,949 conversions, and I hope that you can continue to sell a substantial volume of replacement units.

This brings up the question: how many more burners can you safely sell during the next few months, over and above replacements? Nationwide, I think we can expect a supply of eight or nine per cent more distillate fuel during the next 12 months, than during the past season. Basing its calculations on this or a similar forecast, the Oil Heat Institute of New England has estimated that five hundred thousand oil burners, including orders for both new and replacement units,

will be installed this year, and that more than sixty-five thousand of this number will be installed in New England homes. This sounds like a realistic estimate.

Each of you, individually, might as well forget about nationwide estimates, because national and regional statistics will have only a limited meaning, if any, in your locality, or in any locality. There will be more than 8 per cent additional fuel available in some areas, and less than 8 per cent in others. Each of you must ask yourself the question—how many more burners can I safely sell in 1948—and you are the only one who can answer that question. You will have to base your estimate on the maximum volume of heating oil your supplier, or suppliers, inform you they expect to deliver to you. Once you know your available supply, and have provided for business to which you are already committed—your present customers—you can use the remaining quantity to cover new oil burner installations. Your estimate will also depend on the success of the conservation program in your local area.

House Committee Report

If you oversell your supply, the problems will start accumulating once more with the arrival of fall. And you know as well as I do that none of us can afford to have next winter's experience duplicate that of last year. To make this point fairly clear, let me quote from a recent report of the House Armed Services Subcommittee, sometimes known as the Short Committee: "Within the next six months the government must determine whether present efforts on the part of the government, and industry, to persuade the consumer to conserve oil will be adequate . . . if present trends continue, if, in other words, the voluntary program gives evidence of failure, rationing must be imposed." The complete report fills several columns of type, most of it in similar vein.

Now I disagree emphatically with the conclusions of that report, but there it is, a sample of the kind of thinking that is going on. Although the oil industry has an unmatched record of growth, accomplishment, and service to the consumer, the threat of government control has been raised. There is the challenge. Making conservation work is one way we can meet it.

I want to compliment the Oil Heat Institute of New England on the program it has undertaken to accomplish just this. Your current advertising campaign, under the headlines, "Good News on Fuel Oil," and "Oil to Heat More Homes," is timely and constructive and should prove extremely helpful.

While the oil industry is expanding at an unprecedented pace to meet the demands of millions for more and more oil, there is no reason why fuel oil jobbers and distributors cannot grow along with it. That's the way we at Shell want to see it because we believe in the oil heat industry as strongly as you do. I want to repeat a few words of caution, however. Don't oversell your available supply. Grow sensibly, promote conservation on a constructive "no-scare" basis that will keep your customers satisfied, as you are doing in your current advertising, and all of us can look forward with confidence to a healthy and prosperous future—a future where there will be fewer "don'ts" and ample opportunity for everyone to take on all the business he can secure in a competitive market.

Warm Air Anthratube

MILAN BILlich

Research Engineer
Anthracite Institute

One of the most unusual recent developments in coal fired equipment is the Anthratube. The Anthracite Institute made a scientific approach to the problem of the most efficient method of burning anthracite and this furnace is the result. It is not available for retail sale as yet, but should be soon.

ANTHRACITE has combustion characteristics which are unique when compared with those of other solid fuels.

The difference between the burning characteristics of anthracite and of soft coal was first discovered some 134 years ago, by accident. The discovery was made in a wire mill operated by Josiah White and Erskine Hazard at the Falls of Schuylkill during the war with the British. The mill had operated before the war with bituminous or "sulphur" coal from Virginia. The British had, however, thrown a blockade along the Atlantic coast so that it was impossible for a ship to come from Virginia mines, and not a bushel of coal could be bought in Philadelphia and vicinity, week after week. Then, a cargo of anthracite, or "stone coal" as it was then called, arrived at the Philadelphia wharf, and the whole cargo was promptly bought by Josiah White who had burned stone coal before, although not very successfully.

This Coal Won't Burn!

This particular fuel appeared even harder to ignite than the previously used anthracite. A whole night was spent in unsuccessful attempts to ignite the coal, and at daybreak the men were told to quit and go home. The furnace door was slammed shut, and the men went away. Fortunately, one of them had forgotten his coat and came back for it. When he approached the mill, the whole place appeared to be on fire, and he ran to call the owners.

The mill, however, was not on fire. It was only the furnace which was red hot. The anthracite had ignited after the furnace door had been shut and was now burning lustily, giving off much more heat than any other fuel had given before. The problem of burning

stone coal was accidentally solved: close the furnace door in order to increase the draft through the fuel bed, and leave the fire alone. The correct method was nearly the reverse of the one employed when Virginia soft coal was burned.

Different Equipment Needed

In spite of this early discovery of its peculiar requirements for efficient combustion, up to the present time, anthracite has been generally burned in equipment which is essentially the same or differs only slightly from the equipment which is used in the burning of the bituminous coal. Yet, the burning characteristics of anthracite, with its low content of volatile matter, are very different from those of various bituminous coals whose high content of volatiles require much more burning space, if those volatiles are to burn completely and furnish all the heat they are capable of producing. This heat is a very substantial part of the heat contained in the bituminous coal. On the other hand, the heat given off by burning anthracite is produced mostly—to the extent of 85 per cent or more—by the oxidation of the carbon itself. Under proper conditions, anthracite can be made to burn completely within the volume it occupies without the necessity for secondary air inlets or secondary combustion spaces. This fact is the cornerstone for a new principle of design for anthracite-burning equipment, now known as the anthratube principle.

This new principle of design was not an accidental discovery like the one made at the Falls of Schuylkill in 1814, but resulted from a basic research program carried on in the Anthracite Institute Laboratory for several years. One of the objectives of this research was to determine the effect of the size of anthracite on

the heat absorption in various sections of different sized boilers and air-cooled cylinders. In this investigation, several sizes of anthracite were burned at depths of 8, 12, 16 and 20 in. in four-section round cast-iron boilers 10, 14, 20 and 28 in. in diameter and in air-cooled cylinders 12, 20 and 30 in. in diameter. The boilers were arranged so that the heat absorbed by the firepot, intermediate and dome sections could be independently measured. The results of this investigation are summarized in Table I.

TABLE I
DISTRIBUTION OF HEAT LIBERATED IN BOILERS
(in per cent)

Boiler Diameter—In.	10	14	20	28
Absorbed by Firepot	57.4	48.1	36.2	26.2
Intermediate	11.2	11.3	14.1	12.4
Dome	5.4	8.9	5.7	7.6
Total Absorption	74.0	68.8	56.0	46.2
Stack Gas Loss				
Undeveloped Heat	10.5	7.3	7.5	8.4
Sensible Heat	10.5	21.2	23.9	35.2

Table I clearly shows how the per cent of heat absorbed in the boiler decreases as the size of the boiler increases. It also shows that nearly all of the decrease is due to the reduced absorption in the firepot, while the percentage of heat absorbed in the intermediate and dome sections is approximately the same in all boiler sizes.

The heat loss due to incomplete combustion of the bases is somewhat greater in the smaller boiler because the fire does not break through the top of the fuel bed as rapidly as in the larger boiler. On the other hand, the sensible heat loss is considerably greater in the larger boilers so that the total heat losses range from 21 per cent in the 10-in. boiler to 43.6 per cent in the 28-in. boiler.

Small Fuel Bed Needed

The results of this investigation, as well as the experiments made with air-cooled cylinders, indicated that, in order to obtain maximum combustion and heat absorption efficiency, anthracite should be burned in beds of small cross-sectional area.

The higher combustion efficiency in small-diameter firepots is due to the lower average bed temperature, which results from the increased ratio of cooling (sidewall) surface to fuel bed volume, and to the "wall effect," i.e., to the fact that in a bed of smaller cross-sectional area a greater proportion of the air passes along the side walls where it mixes with the gases flowing from the central parts of the bed toward the side walls. This mixing makes possible the burning of the combustible gases in the spaces where their burning does the most good, the spaces adjacent to the heating surfaces.

Thus increased absorption by the firepot of small cross-sectional area is due not only to the increased combustion efficiency and to the proximity of the fuel

bed and the gas-combustion spaces to the heating surfaces, but also to a greater ratio of heat absorbing surface to the volume of burning fuel.

Two of the additional advantages of the use of combustion chambers with small cross-sectional area are (1) that it prevents clinkering, because of the relatively low fuel bed temperatures, and (2) that it permits the design of boilers and furnaces much smaller in size than the conventional styles of the same heating capacity.

Warm Air Anthratube

The application of the Anthratube principle to warm air furnaces presents more problems than are encountered when water is used as the cooling agent, as there is more possibility of local overheating of the surface caused by the high rate of heat release, which can be balanced only by careful direction of the cooling air.

The first warm air Anthratube had a horizontal combustion chamber made up of three finned airplane engine cylinders welded together. The main deficiency of this unit was the fact that the riser leading from the combustion chamber to a manifold above it was too short and too small in cross-sectional area so that, at higher drafts, fly ash and partially burned pieces of coal passed into the manifold where they offered serious obstruction to the flow of the gases. This unit did, however, demonstrate the fact that a finned surface could provide adequate cooling of the combustion chamber.

The next step in the development of a warm air Anthratube was the construction of a unit with a vertical firepot, and with the coal feed and ash elimination mechanism the same as on the vertical Anthratube boiler. Fig. 1 shows a side view of this model.

The combustion tube of this model was 7 in. in diameter and 14 in. high. Fifteen fins made of 14 ga plate were spaced radially around, and welded to the combustion tube. The air, which was introduced tangentially, was caught by these fins in scoops and directed against the firepot.

The gases left the firepot at the top and entered 8 hollow-fin tubes, which contained baffles to give maximum air travel, and opened into a 4-inch flue connection.

The performance of this unit was very good, but an analysis of the costs of construction showed that they

would be too high for practical purposes.

In the vertical warm-air Anthratube, Model 2, the firepot consisted of a $7\frac{5}{8}$ in. diameter tube with spiral fins of 12 ga metal rolled on the tube and treated with a zinc compound to hold them in place. After a few days of testing some of these fins loosened and fell due to the burning off of the galvanizing. As the tube itself was damaged in this process, a new tube of the same dimensions was constructed and new spiral fins were welded to its surface.

The centrifugal heat absorber was incorporated into this unit and a fly ash separator was added in order to return the fly ash to the combustion chamber.

The operation of this unit was generally satisfactory but the output was not as high as desired.

The combustion tube of Model 3 was elliptical in shape, $6\frac{3}{4}$ in. wide, $11\frac{3}{4}$ in. long, and tapered out at the bottom. The gases were taken out from the top of the combustion chamber tangentially into an eight inch tube. The end of this tube contained a fly ash trap into which was deposited the fly ash separated by the spinning of the gases. A valve at the end of this trap opened when the induced draft fan was off, and the fly ash was dropped into the ashpit. The gases were reversed when they reached the end of the outer tube and passed through a 5 in. inner tube into the fan.

The elliptical firepot did not give the desired results, the ejection of ashes being especially unsatisfactory.

A new model was therefore constructed in which the firepot was a cylindrical tube of $6\frac{3}{4}$ in. inside diameter. This was designated as Model 3A. The fins on this unit were vertical, $\frac{3}{4}$ in. wide, and welded to the combustion tube walls on $\frac{1}{2}$ -in. centers. The output was 50,000 Btu per hour with a 1725 rpm fan, and 61,000 Btu per hour with a 3450 rpm fan when burning pea anthracite. The firepot became red at times, especially when a new fire was started or when the fan went off after a long burning period. The fins on the tube buckled and broke loose. For these reasons, it was decided to design a new model in which these deficiencies would be corrected.

The Final Laboratory Model

The cast iron combustion chamber of the final Laboratory model of the vertical warm air Anthratube was cast in one piece with twenty fins spaced equidistantly around it. This tube is 16 in. high, the inside diameter is $8\frac{1}{2}$ in., and the wall thickness is $\frac{3}{4}$ in. The fins are 16 in. long, 4 in. wide, and $\frac{1}{4}$ in. thick.

On a center line, $11\frac{1}{2}$ in. above the base, a 6 in. standard steel pipe was bolted to the combustion chamber at 15 deg with the horizontal to serve as a sleeve for the Archimedes coal delivery tube. A 4 in. steel pipe bolted to the combustion chamber served as an inspection port. The pipe extends through the outside casing. Its outer end has been cut at an angle of 5 deg with the vertical, and a barometric damper pivoted at the top. This damper is open when the draft fan is not operating and is pulled closed by the suction of the draft fan when it operates.

In the vertical warm air Anthratube, Model 4, coal is fed to the combustion chamber through a 5 in. Archimedes tube and refuse is removed by a two-step reciprocating plate made of steel. The power source is a $\frac{1}{8}$ hp electric motor operating at 1725 rpm. This motor is directly connected to a 1764 to 1, double reduction

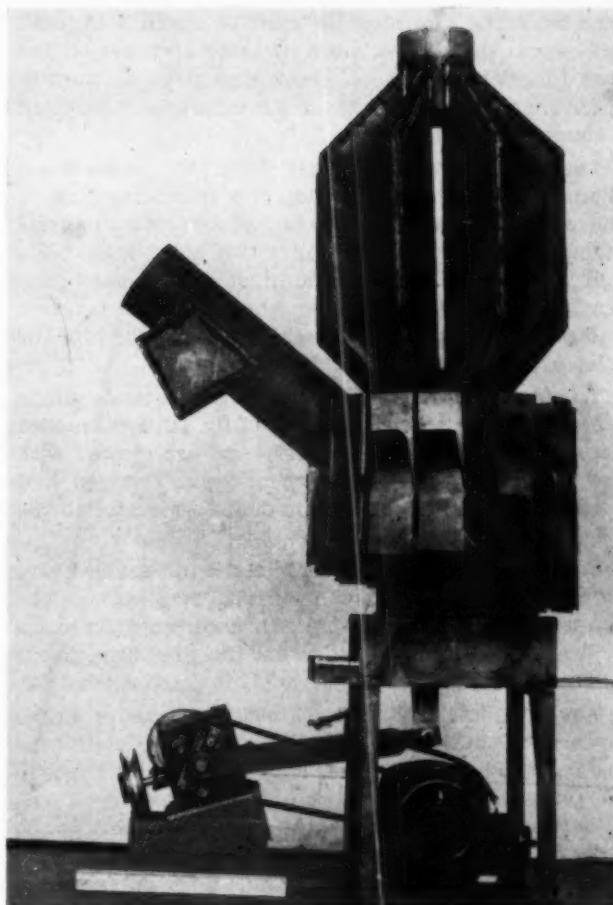


Fig. 1. Side view of vertical Warm Air Anthratube, Model 1.

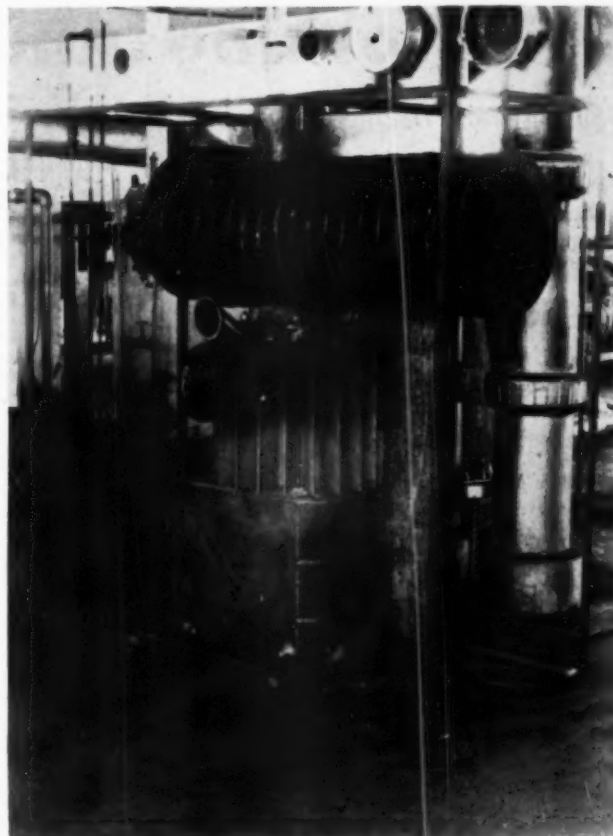


Fig. 2. Final laboratory model of Warm Air Anthratube (Without the casing, but showing casing form.)

gear box. The intermediate shaft to which a 14 tooth sprocket is fastened drives a 47 tooth sprocket on the feed tube by a chain. A crank arm fixed to the low speed shaft reciprocates the ash discharge ram through a connecting linkage.

The combustion gases rise from the combustion chamber through a short, tapered transition pipe to the cylindrical heat exchanger, which has an inside diameter of 10½ in. They enter this pipe tangentially and spiral around an inner 5 in. steel pipe until they reach the end of the cylinder where they are reversed and passed through the concentric inner tube into the inlet of the induced draft fan.

The fan discharges the gases into the vertical cyclone separator. The heavier particles of fly ash are dropped through the funnel on the grate and are ejected with the refuse. The gases are then again reversed and passed through the inner tube of the separator to the 7-in. smoke stack.

Cooling air is supplied by a 9 in. x 9 in., double entry blower wheel driven by a ¼ hp 1725 rpm motor. The fan is belt driven at 900 rpm. Air is directed against a 30 deg baffle of 20 ga steel so that the final direction is essentially parallel to the fins on the combustion tube.

The complete unit is enclosed in a casing whose frame is 60 in. long, 24 in. wide and 56 in. high. The casing is divided into three sections. Section I houses the blower assembly and two filters. Section II encloses the combustion tube, the ashpit, and part of the heat transfer surface. Radiation shields of 20 ga steel are located on each side, 1 in. inside of the outer casing.

Section III contains the draft motor, the drive mechanism, and the refuse. Figure 2 is a picture of the final Laboratory model.

Tests on this unit were conducted in accordance with the United States Bureau of Standards Commercial Standard CS 109-44. The range of tests included maximum output, intermittent operation, bank, and deceleration-acceleration. All tests were conducted with pea anthracite, with the exception of one maximum output test in which buckwheat anthracite was used.

The results of tests led to the following conclusions:

At maximum output, the unit develops 85,000 Btu per hour, with an efficiency of 70 per cent. The power consumption averages 88.8 kwh per ton of coal fired, of which 26.7 kwh are consumed by the drive mechanism and draft fan motor, the remainder being required by the warm air circulation blower.

The fly ash deposited in the external flues averages less than 1 pound per ton of coal fired.

The unit can be successfully banked for a period of 72 hours with a stack draft of 0.03 inch water gauge, and with an average burning rate of 0.99 pounds of coal per hour.

From a standpoint of combustion performance, the unit compares very favorably with any solid-fuel burning furnaces now in use.

These tests also demonstrated that a cast iron combustion chamber with fins cast as an integral part is superior to steel chambers with welded fins, and that a vertical cyclone separator works very efficiently when placed on the pressure side of the draft fan.

Housing And Fuel Supply

Housing Starts Decline Slightly In June

BUILDERS STARTED 93,500 new permanent nonfarm dwelling units during June, according to preliminary estimates of the Bureau of Labor Statistics, U. S. Department of Labor. This was a decline of 4 per cent, or 3,500 units, from the 97,000 new dwellings started in May, which was the peak month thus far in 1948. Despite this interruption in the upward trend, housing activity in June exceeded that in the same month of last year by 16,300 units, or 21 per cent. June was the third consecutive month in which housing starts exceeded 90,000.

About 450,000 new permanent nonfarm dwelling units were put under construction during the first 6 months of 1948, an increase of 94,200 units or 27 per cent, over the corresponding period of 1947. Almost all of the new permanent housing started in the first half of both 1947 and 1948 was privately financed.

Half the reporting cities showed gains in June for permits issued to builders planning new residential construction. Among the large cities showing marked increases were Birmingham, Ala.; Miami and Miami Beach, Fla.; Chicago, Ill.; Indianapolis, Ind.; Des Moines, Iowa; Buffalo, N. Y.; and Norfolk and Richmond, Va. Substantial declines were reported for Long Beach, Calif.; Denver, Colo.; Dearborn, Mich.; Philadelphia, Pa.; and Tacoma, Wash.

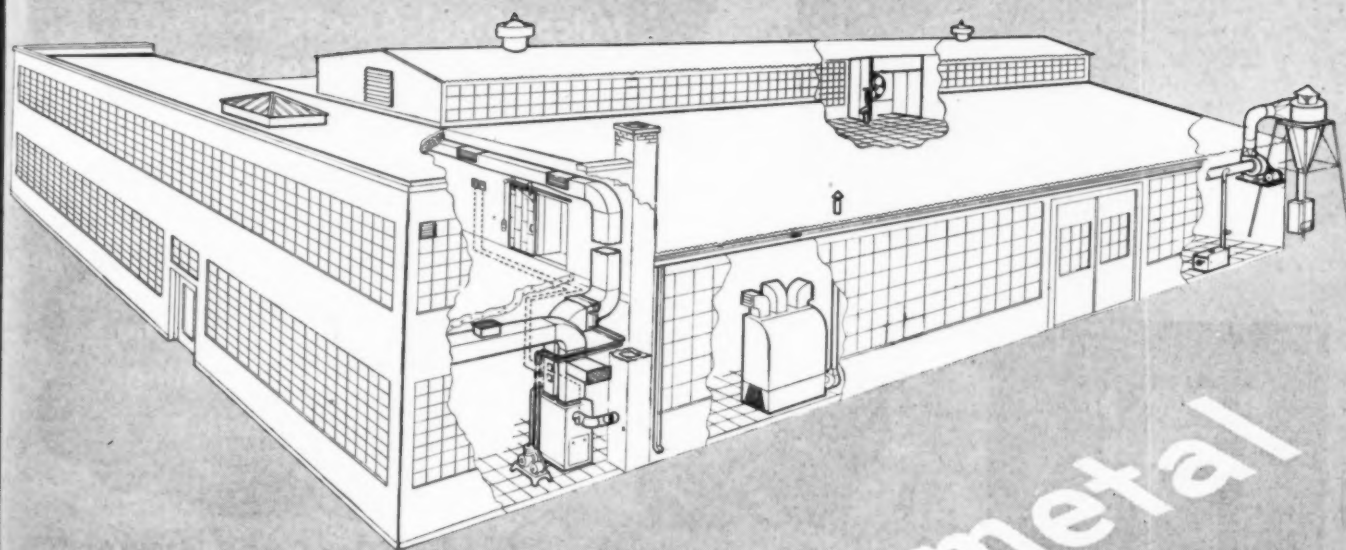
Petroleum Product Supply

THE PETROLEUM INDUSTRY has made available to the American people a net new supply of approximately 27 million gallons of petroleum products daily in the first six months of 1948 over the similar 1947 period, the American Petroleum Institute announced.

This increase of more than 12 per cent, the largest of any major producing industry, was achieved by a rise of 9.95 per cent in domestic crude oil production; an increase of 12.79 per cent in refinery operations, and a decrease of 20.4 per cent in exports. Imports of crude oil and products went up less than 5 per cent.

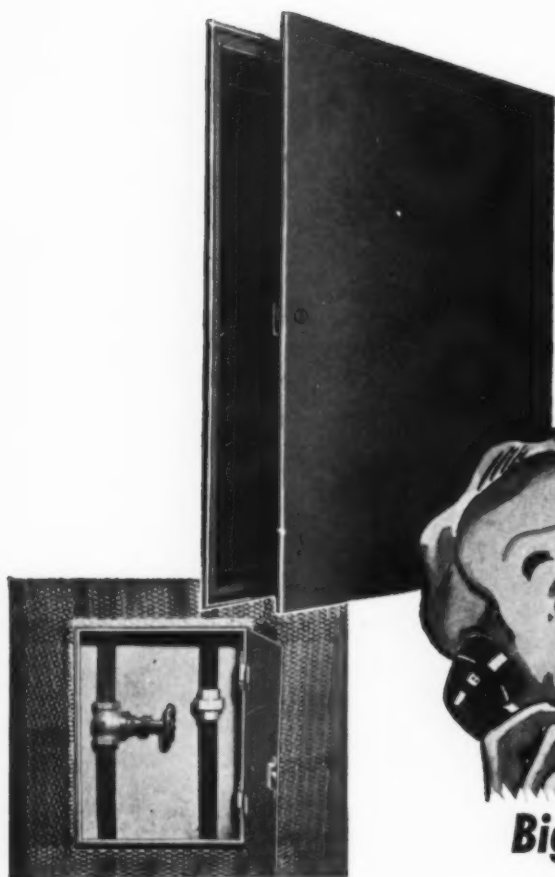
One of the important factors in this outstanding record is the fact that the refineries of the United States have operated for the past 56 consecutive weeks at 90 per cent or more of rated capacity, a feat deemed impossible of accomplishment. Another is the fact that domestic crude oil production for the past 60 weeks has topped 5 million barrels daily.

As a result of these efforts, the industry has achieved not only a stand-off with domestic demand which has risen approximately 9 per cent over the record first half year of 1947, but a considerable cushion against future withdrawals. With a fair degree of luck and a reasonable amount of conservation on the part of the public, chances of serious shortage of petroleum products in 1948 are materially lessened.



sheet metal *Section*

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Correct Practice in Farm Ventilation (III)

Poultry House Ventilation

L. E. PETERSON
ILG Electric Ventilating Co.

The poultry house is one place on the farm that has benefited greatly by the application of electric ventilation. Trying to keep the poultry house free of odors without a positive means of forcing stale air out and fresh air in was a major difficulty.

UNTIL the coming of electric ventilation, good poultry house ventilation was always a problem. The air of the unventilated poultry house contains the moisture that is given off by the birds in breathing, together with the ammonia and offensive odors from the droppings. Some of the moisture condenses on the litter and on the walls of the building, requiring frequent replacement of litter and hastening decay of the building structure.

Gravity Unsatisfactory

Gravity methods of ventilation have never been satisfactory since they are dependent upon a number of factors over which no control can be exercised—such as the outside temperature, the direction and velocity of the wind and the amount of heat given off by the poultry. Moreover, a properly designed system of gravity ventilation is not only relatively expensive to install but requires constant attention to keep it operating properly under changing weather conditions, since automatic electric control is not practical.

Poultry house ventilation with motor propeller fans is thorough, effective, automatically controlled, provides fresh air without drafts, eliminates the labor and costs of frequent replacement of litter and actual-

ly costs less than a gravity ventilating system. The attention, time and labor of the busy poultry man can be turned to other matters.

Power Cost Low

The cost of operating a poultry house electric ventilating system is low. For 1000 birds only 60 watts per hour of operation is consumed by the fans required and this same economy follows in all sizes of installation, large and small.

A typical system of poultry house ventilation consists of one or more motor propeller fans installed in vertical exhaust ducts, together with necessary air intakes. (See Fig. 1) The duct should be constructed of insulation board or lumber and have a door at the top opposite the fan for removal of warm air in the summer time from the top of the room and for ease in servicing the fan. One fan should be provided for each pen where tight partitions separate the pens from each other. One fan can serve more than one pen, however, where wire screen is used in place of a tight partition thereby permitting free air flow from one pen to the other. The fan should be mounted on an outside wall and an automatic shutter of the same size mounted over the opening to prevent back drafts when the fan is not in operation. Where possible, the fan should be installed



Fig. 1. The drawing shows a typical arrangement for maximum ventilation results. Details are given in the text.

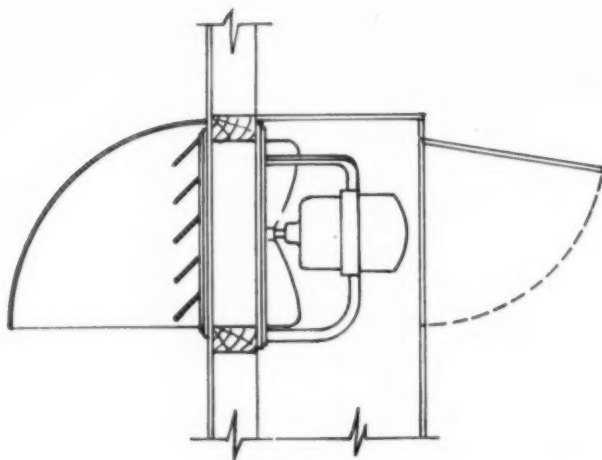


Fig. 2

on the side of the building away from the prevailing wind. Where the fan is installed on the windward side of the building in areas having strong prevailing winds, a hood should be placed over the shutter. (See Fig. 2.)

Each fan should be equipped with its own reverse acting thermostat mounted on the face of the duct at a height of three feet above the floor. This thermostat should be set at 32 F and will automatically shut off the fan if the temperature drops under severe winter conditions. Continuous ventilation is desirable, how-

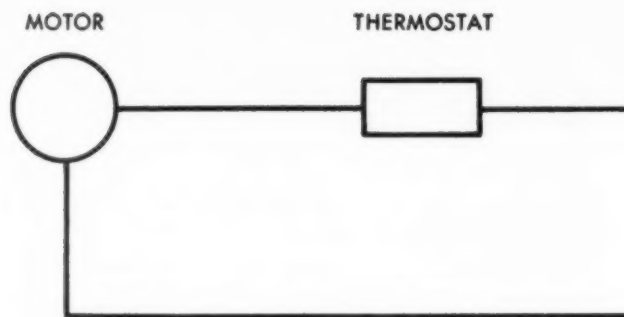


Fig. 3

ever, under normal conditions and the system of ventilation is based accordingly. The thermostat should be wired in series with the fan motor as shown in Fig. 3.

Amount of Ventilation

The amount of ventilation is calculated on the number of birds in the house and should be provided on the basis of one cubic foot of air per minute per bird. This amount is sufficient to provide fresh air and carry off the moisture-laden air without an excessive loss of heat. Thus for 1000 hens, the ventilating fan or fans should have a capacity of approximately 1000 cfm (cubic feet of air per minute). Reference to Table No. 1 shows that two 10 in. self-cooled motor propeller fans should be used in this case.

Table No. 1—Specifications for Fan Selection

Number of Birds	Floor Area Square Feet (1)	Capacity of Fan in Cubic Feet of Air Per Minute (cfm) (2)	No. of Air Inlets (Each 40 sq in. in Area) (3)	Fan Size Required (4)
120	400	120	1	8"
180	600	180	1	8"
240	800	240	2	8"
300	1000	300	2	8"
360	1200	360	3	8"
420	1400	420	4	10"
480	1600	480	4	10"
540	1800	540	5	12"
600	2000	600	5	12"
660	2200	660	6	12"
720	2400	720	6	12"
780	2600	780	7	12"
840	2800	840	8	2-10"
900	3000	900	8	2-10"
960	3200	960	8	2-10"
1020	3400	1020	9	2-10"
1080	3600	1080	9	2-10"
1140	3800	1140	10	2-12"
1200	4000	1200	10	2-12"

(1) Floor area shown is amount of space usually provided for fully stocked house.

(2) For large houses increase fan capacity and number of intakes proportionately.

(3) If air intakes are made with different individual area, total area should equal total area recommended above.

(4) One reverse acting thermostat should be used to control the operation of each fan.

Location of Air Intakes

The size and location of the air intakes is important to prevent drafts and to permit the introduction of the proper amount of air. These intakes should be located so that the incoming air will be drawn across all sections of the pen by the fan. Thus when only one or two intakes are used, they should be located in the wall opposite to the fan. (See Fig. 4-6.) Intakes should be 8 to 10 ft from each other. Where a larger number of intakes are involved, it may be desirable to locate some of them on the same wall as the fan to secure complete coverage of the pen area. (See Fig. 6.) In no case however, should an intake be within 8 ft of the fan. "Short-circuiting" of the air flow will result with a loss of the ventilating effect in the rest of the pen. (See Fig. 5.)

The number of intakes required depends on the amount of ventilation provided by the fan or fans, and recommendations are given in Table No. 1. Windows may be used as air intakes provided they are correctly located and the necessary precautions can be taken to prevent drafts. In the case of double hung windows the lower sash can be raised to act as an air intake if a board is placed across the opening to act as a baffle to prevent the cold air from sweeping directly across the floor. Tip-in windows can be used as air intakes provided a baffle board is placed at the ceiling

in front of the window to deflect the air downward. Where windows are used as air intakes some adjustment of the size of the opening may be needed until experience shows the most satisfactory setting for the pens involved.

Where window openings are not sufficient or are not located in all of the necessary spots special air intakes should be provided. Each intake should be provided with a hinged door, one inch narrower than the inlet opening so that where desirable, the amount of air introduced at that particular spot may be reduced.

Electric ventilation can be successfully used in both insulated and uninsulated poultry houses. In the colder sections of the country, insulation is desirable to make the house comfortable in the coldest weather.

Important Fan Features

Obviously the ventilating fan is the heart of the system and results depend, first of all, on the proper operation of the fan. It must be able to operate 24 hours a day, day after day through a whole season without any attention. It must not overheat. It must not be affected by the moisture and lint in the air that it is exhausting. It should not have any brushes that wear down and require replacing. It should not require frequent lubrication.

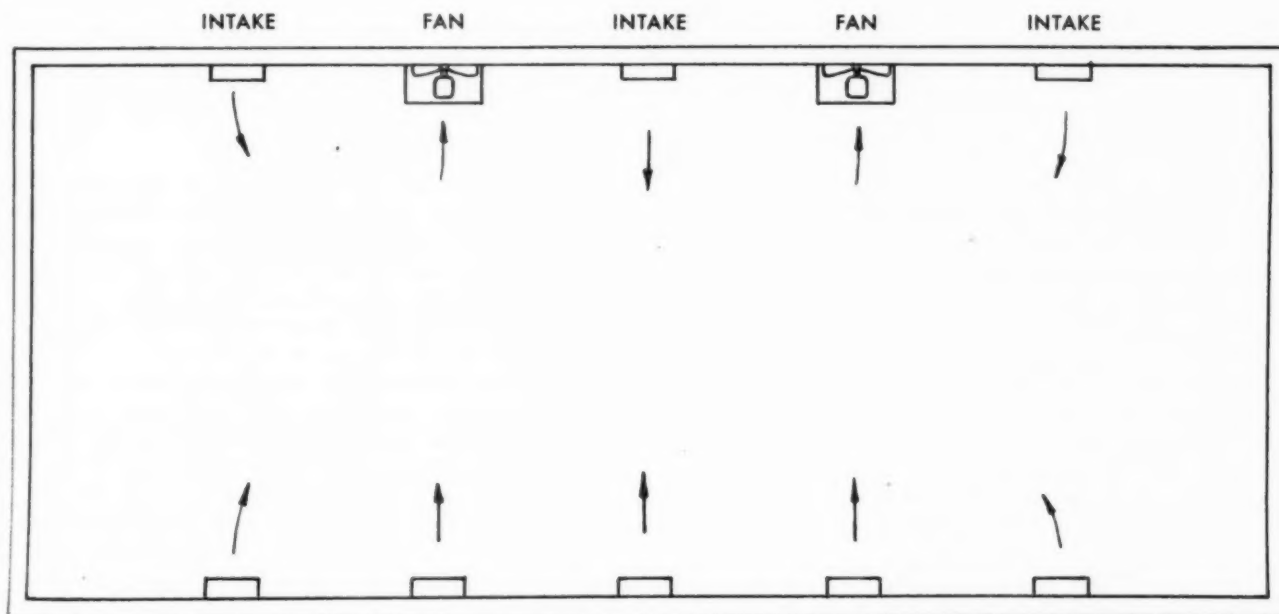
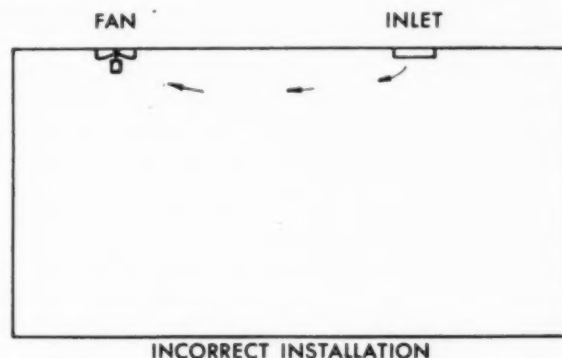
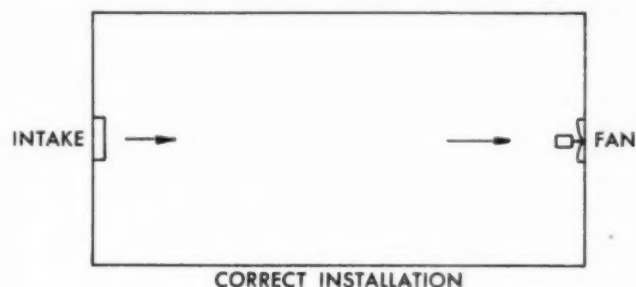


Fig. 4—Top, Left

Fig. 5—Top, Right

Fig. 6—Bottom

Pattern Development for Heavy Gauge Blow Pipe Fittings *

By WILLIAM NEUBECKER
Brooklyn, N. Y.

Three-Way Pipe

A CORRESPONDENT from Indiana requests a descriptive layout for a three way pipe. A reproduction of his sketch being shown in Fig. 1. Two pipes, one 15 in. and the other 8 in. intersect each other at an angle of 45 deg, producing a joint or miter line as shown. In developing the two required patterns, triangulation has been employed. Take a reproduction of the 15 in. pipe and place it as shown in Fig. 2. Bisect 1-g and using C as a center draw the semi circle 1-4-g. Through C draw the center line 4-d. Using d as a center draw the quadrant shown by h-i. To find the true section on the joint line, d-8, draw the line d-5 at right angles to d-8 and intersect this line d-5 by continuing the quadrant curve. Now draw the one-half elliptical figure shown from 5 to 8 which will represent the section on the miter or joint line d-8. Assume that a cut was made on the quadrant from i to d, also a cut on the semi-ellipse from 5 to 8. Now, if the quadrant i-d-h and the semi-elliptical figure 5-d-8 were bent up at right angles to h-d and d-8 respectively we would have an uncovered model. To develop this covering or pattern shape, finding the true length of the dotted and solid lines shown in Fig. 2 is next in order. To avoid a confusion of lines in so small a drawing space half of the semi-circle in three divisions as shown from 1 to 4, also space the semi-elliptical section in 3 divisions as shown from 5 to 8. From the divisions 2-3 and 4 draw lines at right angles to 1-g to intersect the line 1-g at a-b and c. In a similar manner from the divisions 5-6 and 7 draw lines at right angles to d-8 to intersect this line at d-e and f. Now connect these intersections by solid and dotted lines as shown, always drawing the dotted lines the shortest way across.

For example: to find the true length of the dotted line c-e in Fig. 2 take this distance and place it on the horizontal line c-e in Fig. 3. From c and e at right angles to c-e draw the lines c-4 and e-6 equal to c-4 and e-6 in Fig. 2. Connect 4 to 6 in Fig. 3, the desired true length. Proceed in this manner for the balance of the true length dotted and solid lines. Comparing the numbers and letters in both Figs. 2 and 3 will make this clear. Using the same procedure as just described, find the true length of the solid lines shown in Fig. 4.

Developing the Pattern Shapes

The pattern can now be developed as shown in Fig. 5. Take the length of d-c in Fig. 2 (which shows its true

length) and place it as shown in Fig. 5 from 5 to 4. Now using the true length 4-6 in Fig. 3 as radius and 4 in Fig. 5 as center describe the short arc near 6, which intersect by an arc struck from 5 as center with a radius equal to 5-6 in the semi-ellipse in Fig. 2. Now with 4-3 in the semi-circle in Fig. 2 as radius and 4 in Fig. 5 as center describe the short arc near 3 and intersect it by an arc struck from 6 in Fig. 5 as center, with a radius equal to the true length of the solid line 6-3 in Fig. 4. Proceed in this manner until the line 1-8 in Fig. 5 has been drawn, which shows its true length and was obtained from 1-8 in Fig. 2. Through points so obtained trace the outline 1-4, 5-8. At right angles to 4-5 in Fig. 5, draw the line 4 to 1 to equal the divisions 4 to 1 in Fig. 2. Complete the rectangle shown. Then will 8-5-1°-1-4-1 be the half pattern shape for the 15 in. pipe. If the pattern is desired in one piece simply reverse the half pattern on the line 1-8.

The Lower Half

NOTE: In precisely the same manner just described for developing the pattern for the *upper half of the 15 in. pipe*, develop the pattern for the *lower half of the 8 in. pipe*. The full pattern for the upper half of the 8 in. pipe has been developed in Fig. 6, which must be added to the lower half of the 8 in. pipe above referred to, for a full pattern.

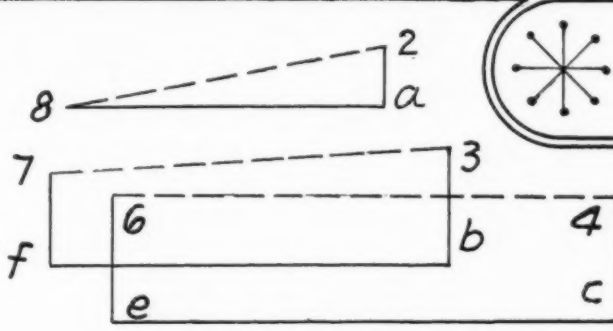
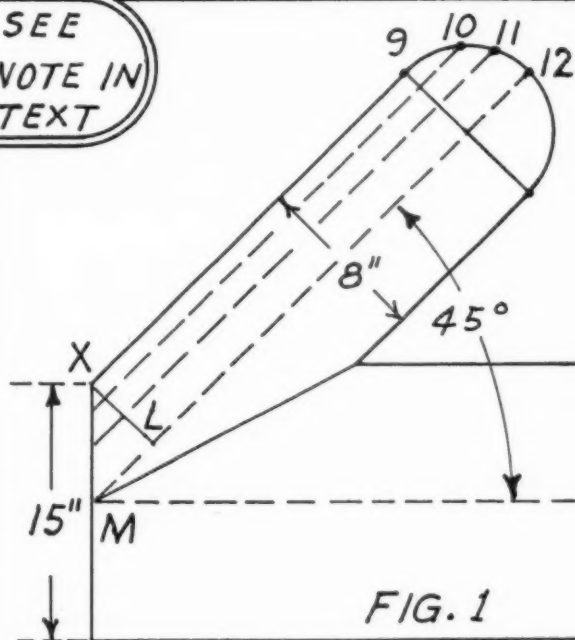
The Eight-Inch Pipe

The pattern for the upper half of the 8 in. pipe follows: At right angles to 9-X in Fig. 1 draw the line X-L. From the divisions 9 to 12 in the semi-circle of the 8 in. pipe draw lines parallel to 9-X to intersect the lines X-L and X-M as shown. Now take double the girth of the quadrant 9 to 12 in Fig. 1 and place it on the vertical line as shown in Fig. 6 from 12 to 9 to 12. From these points draw lines indefinitely at right angles to 12-12. Now, in each and every instance, measuring from the line X-L in Fig. 1, take the various distances to the intersections on the line X-M and place them on similar numbered lines in Fig. 6 as shown. Through these points trace the curved line from M° to 9-M°. Now take the distance from X to 9 in Fig. 1 and place it in Fig. 6 from 12 to 9 and complete the rectangle. Then will M°-g°-g°-M° be the full pattern for the upper half of the 8 in. pipe.

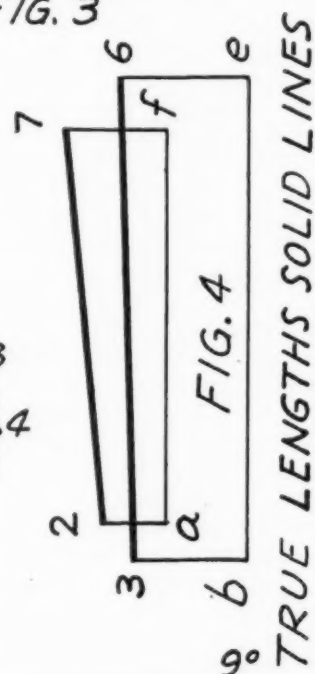
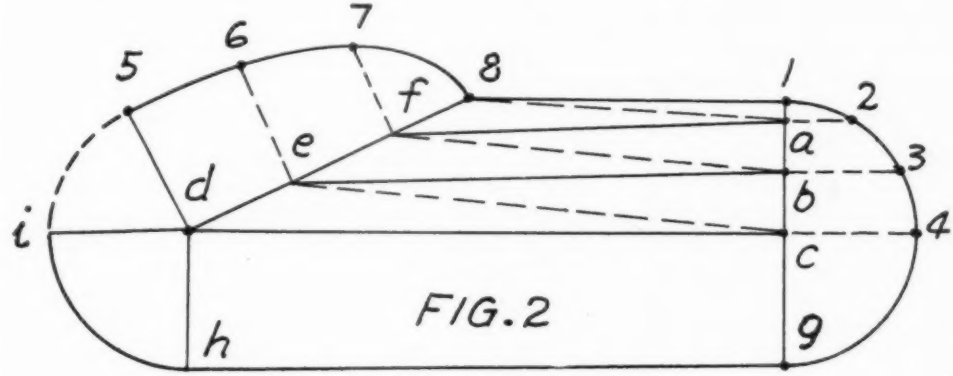
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— PATTERNS FOR A THREE WAY PIPE —
 — USING THE SIMPLIFIED METHOD IN TRIANGULATION —
 — IN DEVELOPING SAME —

SEE
NOTE IN
TEXT



TRUE LENGTHS OF
DOTTED LINES
FIG. 3



TRUE LENGTHS SOLID LINES

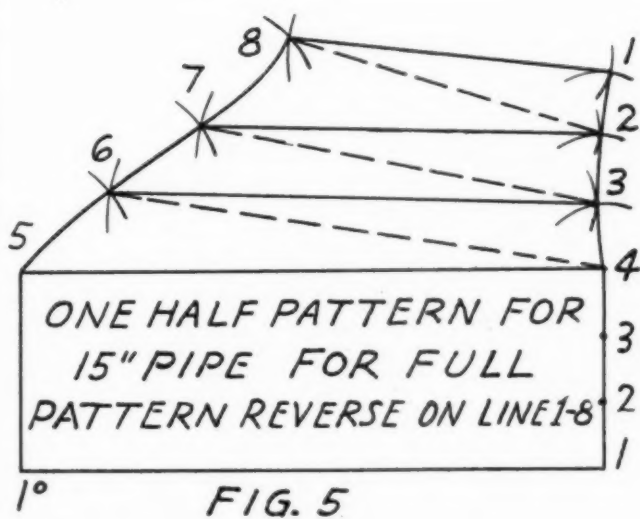


FIG. 5

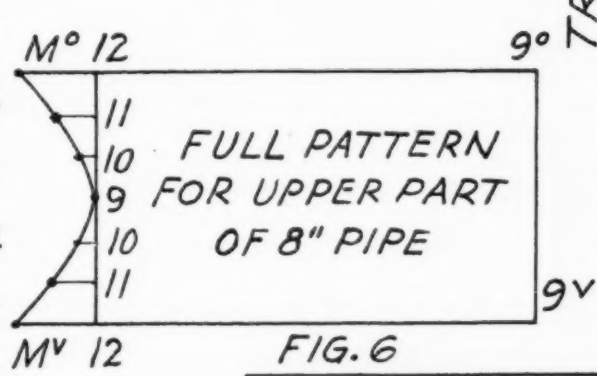


FIG. 6

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Scientific Shop Layout (I)

E. E. ZIDECK

Sheet Metal Consulting Engineer

This is the first of a new series designed to bring the latest in shop layouts and techniques for efficient production to our readers. The author's experience in sheet metal design and production has enabled him to show step-by-step the way in which a sheet metal shop can be made to operate most effectively and economically

SHOP Layout implies the most advantageous location of materials, tools and machines, work benches and offices; these latter in respect to access from the street, employee's entrance, time clocks if any, material receiving and product delivery, and general work layout and management.

It is undoubtedly true that a systematic shop layout fitting the conditions and answering the requirements, will introduce a general order, increase productivity, minimize employee's loss of time, facilitate supervision, cause less trouble in material receiving, storing and product delivery, and on the whole inaugurate a system indispensable under modern competitive conditions and labor costs. It is this latter item principally, which necessitates an overhauling of the shops to save waste time and motion; in other words, eliminate from the shop the non-productive movements of the help, largely caused by unscientific and time-wasting conditions in the shop. It is not a worker's fault if he has to spend too much time wandering through the shop from one end to the other, in search of a machine on which to perform a certain operation; or if material must be hauled all over the shop, from one misplaced machine or tool to the other. This also applies to a crowded shop, in which there is no room provided for the larger assembly operations, such as are common in air conditioning and industrial sheet metal shops.

A scientific shop layout brings with it a time-saving system that can be introduced into any shop. *The system remains the same*, in shops large and small; but it is necessary to consider the following physical conditions in relation to any shop, because the shop layout is dependent on them.

1. Material receiving; the location of the entrance for incoming materials as they are unloaded from the delivery truck, and their storing for use, is a prime factor in any shop layout.
2. Windows, skylights or other means of bringing natural light into the shop.
3. Employees' entrance, facility of time card racks; possibility of fire hazards.
4. Washrooms, toilets, clothes closets as required by law in practically every state and under city ordinances).

5. The proximity of the engineering facilities of the shop: layout and directing; inspection, etc.
6. Delivery of the finished product; assembly area in which the product can be completed, without interfering or being interfered with by other shop work.

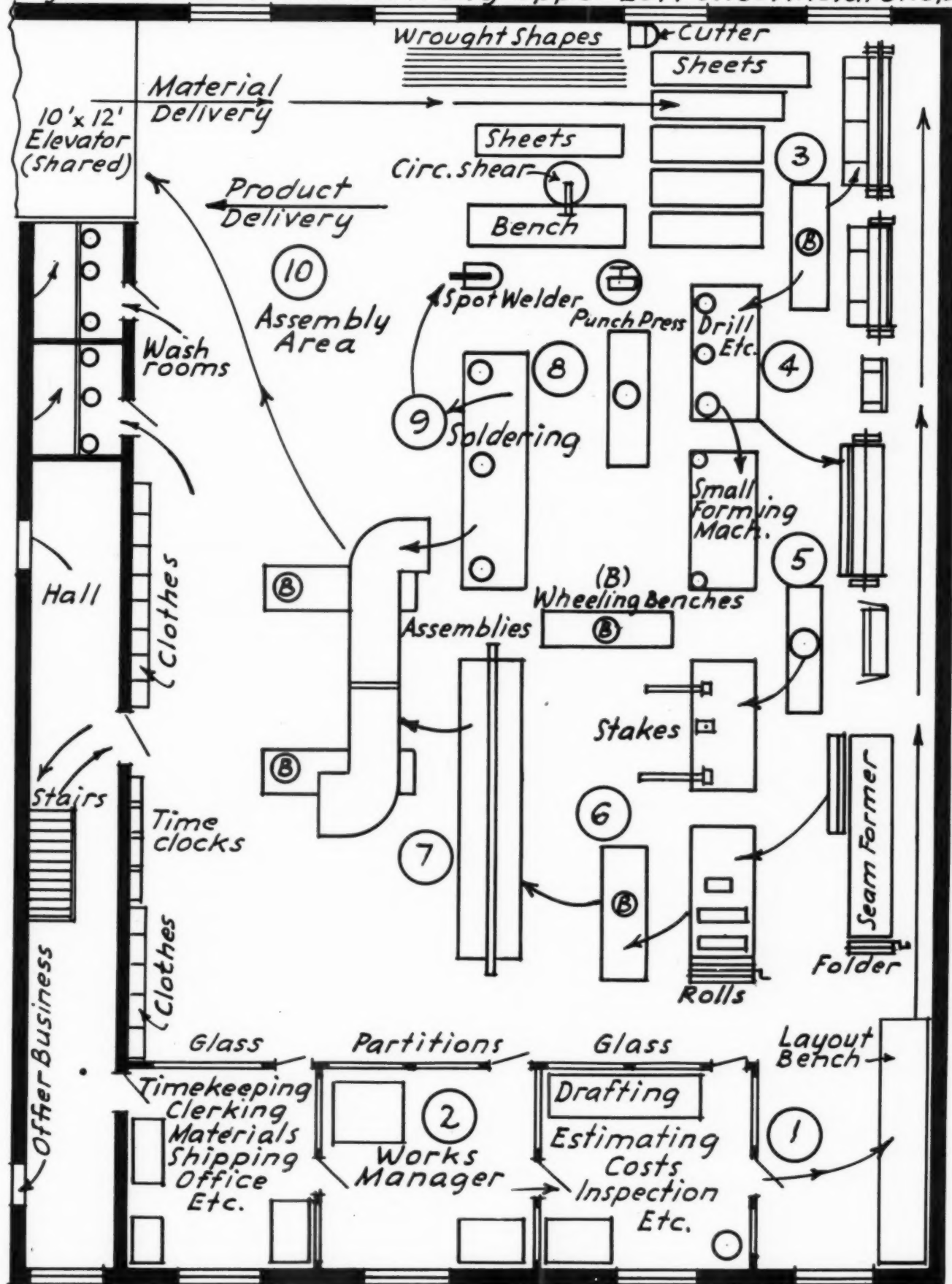
There are scarcely two shops alike as to physical conditions, floor space, light, equipment on hand, number of men working, and other items enumerated under 1 to 6, inclusive, above—Each shop would require, accordingly, its own layout engineering. Another way is to present shop owners with a sufficient number of the most up-to-date shop layouts, embracing all conceivable physical conditions; and let them study the layouts and choose the one which could be applied locally, the conditions being comparable. The shop layout work is easy to do once the right pattern has been selected. Therefore, in this series on shop layouts and descriptions a number of shops will be presented (reorganized for productivity during and after the war). The shops include small general sheet metal working, architectural, furnace, air conditioning, industrial and other such common sheet metal shops, also sheet metal shops in connection with larger manufacturing, specialty shops, aircraft sheet metal shops, marine, automotive, car building and many other. Factory or not, the sheet metal shop remains the same, except for the amount of equipment and number of men employed. But the work is the same: an efficient system must be followed to get the best results.—These layouts will serve the purpose also, of appraising the prospective builder of the best arrangements for a new shop.

1.

A New York City, Upper Loft Shop

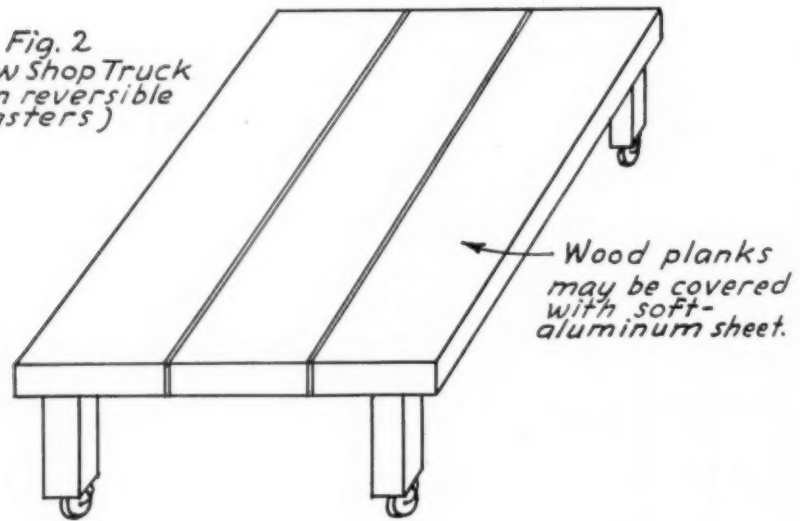
The accompanying illustration of a shop planned for production is taken because it will serve as well as any other in this series to demonstrate the system to be observed in a sheet metal working shop, large or small. This shop does general sheet metal work and makes air conditioning housings and ducts, but its principal item is the manufacture of replacement skylights of which there are thousands needed annually in New York City. These skylights are of various

Fig. 1 47' x 75 Ft. New York City Upper Loft Sheet Metal Shop



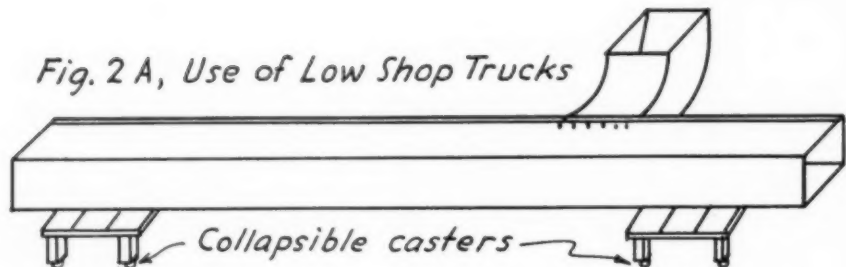
Note: The Wheeling Benches shown in Fig. 1 are 30" Wide, 8'-0" Long and 30" High.

*Fig. 2
Low Shop Truck
(on reversible
casters)*



The use of time-saving equipment like the illustrated benches is an important part of efficient shop operation. A shop may be arranged correctly but the layout must function well.

Fig. 2 A, Use of Low Shop Trucks



sizes, some of them just to shed light upon a dark stairway or hallway; and some over central shafts from which light is received into the several stories of the building. The three principal items of work done in this shop may be classed as (A), guttering and deck work; (B) air conditioning housings and ducts; and, (C) skylights. Although the products differ considerably, they do not affect the system to any great extent, as will be shown in the following text.

Building Characteristics

As a preliminary to the description of the shop proper, let us study the physical conditions of the building in which the shop is located.

(1) The location is in the nineties, on the East Side, where the buildings are old and the ground floors occupied by diverse stores.

(2) The building is 100 ft wide, 75 ft deep, divided by a central hallway extending on the ground floor from street to a companion elevator, with material received from the alley flanking it. Stairs from the hallway lead to a second story, opening on a similar hallway, dividing the story in two, a light manufacturing company occupying the left loft, and the sheet metal shop the right.

(3) Washrooms to serve both lofts are placed at the

rear of the hallway next to the elevator, which opens to serve both lofts. The elevator is operated by a man employed by the building.

The sheet metal shop has four windows 5 ft wide in the front and the same number in the rear, as shown in the drawing. The elevator opens into the shop, as marked; and materials are received and finished goods for delivery transported down to the alley by it. The three offices erected in the front portion of the loft are provided with glass panels by which light from the street enters the shop proper. The one window at the right in the drawing is left free of obstruction to permit its light striking the row of machines aligned in its path. On the whole, during clear days, there is plenty of light to work by, in the entire shop.

Shop Arrangement

The shop is arranged as follows:

(A) Materials are received from the elevator, checked by a clerk whose office is at the left in the diagram; they are stored away from the elevator, near the rear wall, and identified as structural shapes and sheets in the drawing.

(B) Immediately in line with the materials is the cutter for the structural shapes, and two power and one foot-shear, 3. The sheet material is moved along

the shears on one of the wheeling benches, *B*. There is a 6 ft passage left between the machines and the nearest benches, so that the wheeling benches can be moved to, and from, the machines, without obstruction. The sheared material is loaded, and parts requiring further operation, hole drilling, punching, etc., are delivered to the bench 4. Circular shearings, obtained at near the sheet storage, are also delivered to this bench if machining is required. The numeral 5 designates the forming area, which extends to the front layout bench at 1, and here are grouped a press brake, a hand brake, a seam former, a folder, and 4 ft capacity rollers. Parts destined for any kind of forming are forwarded to the respective machine, loaded on one of the wheeling benches. The parts formed and made ready reach the area 6, where they are fitted for binding, or seamed on stakes, and then loaded for delivery to riveting or soldering or sub-assembly at 7 or 8; with the finishing work and spotwelding being done at 9, and the final assembly for delivery at 10. It will be observed that there is almost 17 ft of space left between the benches and the wall, for sub-assembly and final assembly work, which is considerable, especially on housings for air-conditioning purposes, and on large ducts, as shown.

(C) This layout results in a working system by which the processing of materials starts at the right rear of the shop flows step-by-step to the front of the shop; then turns and proceeds rearward for finishing and delivery into the elevator.

Work Categories

Sequence operations in any sheet metal working are as follows:

1. Draftsman-engineer cooperates with the layout personnel in devising patterns, templates and work directives.
2. The works manager, or his office issues the orders for production.
3. This category of work includes all cutting or shearing of material to prescribed sizes and specifications.

4. This group consists of preparatory work, such as notching, drilling or punching the flat sheets before forming.
5. All forming work would come under the next heading.
6. This group fits the formed parts for seaming, riveting, etc.
7. This category fastens parts prior to assembly.
8. Sub-assemblies are soldered and otherwise processed before the product reaches assemblers.
9. Sub-assemblies are finished and aligned for final assembly.
10. Final assembly is done; the product inspected; delivery orders attached; and the product is delivered to the elevator for shipment.

These ten work-categories are repeated everywhere in the up-to-date shop layout, although the arrangement differs, as the physical conditions in the shop and the product differ. We can apply the system in the making of drinking cups; and we must apply it in an aircraft or an automotive, or a shipbuilding sheet metal shop, to obtain the most orderly processing and maximum productivity. The system need not chain the workers to one operation. That is not its intent. It simply aligns the materials, the machines, the operations, in their logical order, as required by the nature of the work; and it saves the workman's time that might be spent looking for the right tools and the right place to do his work. If only one workman is in the shop, he moves from area to area, at each performing the operation next in sequence, finding all the tools for the operation in that certain place, and he moves steadily forward until he arrives at the elevator, with his job done and ready for delivery.

This phase of the system will become apparent once we exhibit here as we proceed, certain specific production, in which the sequence operations with certain tools under certain conditions must be strictly adhered to in avoiding troubles in consequent and final work processing.

Pig Iron Agreements

APPROXIMATELY 114,000 TONS of pig iron monthly during the eight months beginning August 1, for the manufacture of cast iron products for residential housing will be provided under a voluntary industry agreement which has now been formalized, the Office of Industry Cooperation recently announced.

The agreement in its final form has been approved by both the Attorney General and the Secretary of Commerce and the latter is submitting requests for compliance to all proposed participants. These requests for compliance with provisions of the agreement must be signed by participants in order to provide immunity under the anti-trust laws and the Federal Trade Commission Act.

Approximately 250 individual manufacturers, many of whom are small concerns, are eligible to receive allocations of pig iron under the agreement for the

production of the following materials:

Castings for warm air furnaces, pressure pipe and fittings, soil pipe and fittings, radiation, boilers, plumbing drainage products, castings for low water cut-offs and boiler feeders, castings for circulating pumps and built-in fittings, recess drains and cast iron body valves.

The agreement is intended to provide sufficient pig iron to manufacture amounts of cast iron products necessary for: (1) construction of residential housing at the rate of one million units during 1948, and at the same annual rate during the first two months of 1949, and (2) for essential maintenance and repair of existing residential housing.

It is expected that almost all producers of merchant pig iron will participate in the agreement which was developed by OIC in cooperation with pig iron producers and manufacturers of cast iron housing products.

Stainless Steel — A Metal Family

A permanent Stainless Steel Industry Exhibit has been opened in the Architects' Samples Building in New York City. Sponsored by the American Iron and Steel Institute it is aimed at emphasizing the place of stainless steel in modern American industry. This article, a history, was issued by the Institute and the illustrations are from the new Exhibit.



This is one of the displays that is contained in the New York exhibit and shows only a few of the many uses of stainless steel.

TODAY the term stainless steel denotes a large family—a group of some 30 alloy steels which resemble each other, yet differ widely in their characteristics and uses.

The family resemblance is based on the fact that all stainless steels contain chromium in addition to the iron and carbon present in all steels. It is the chromium in this combination that makes the steel stainless. The chromium joins with oxygen in the air to form an oxide on the surface—a microscopic film that protects the metal from rusting and discoloration.

If the protective surface film is scratched or broken, it forms again just as soon as the metal is exposed to

the oxygen present in ordinary atmosphere. When stainless steel is used in high temperatures, the film thickens, loses its transparency and acts as a coat of armor, resisting further oxidation when temperatures are so high that the noble metals (gold or silver), would melt away.

High "Creep" Strength

Certain special types of stainless steels are used at temperatures up to 2000 F not only for resistance to oxidation or scaling, but because of their relatively high tensile strength at elevated temperatures. At these high temperatures many metals have a tendency to "creep" or stretch under stress. Bolts for high tem-

perature service elongate and therefore must be tightened frequently. Stainless steels with high creep strength characteristics are used to overcome this tendency.

The chromium in stainless steels also resists corrosion and discoloration when the metal comes in contact with various acids and alkalis. For example, when you cut a lemon with a stainless steel knife, the blade doesn't stain, even momentarily.

11.5 Percent Chromium Is Minimum

All stainless steels contain at least 11.5 per cent chromium. When other elements are added, the character of stainless steel undergoes a change. Nickel, for example, makes it stronger and more ductile, so that it can be more easily cold-worked and formed into a great variety of shapes at ordinary room temperatures. By special processing, fine wire of nickel-chromium stainless can be produced with a tensile strength of 300,000 pounds or more per square inch.

Other elements impart still other special qualities. Molybdenum, for example, increases the ability of the stainless steel to resist corrosion by reducing pitting under severely corrosive conditions. Sulfur or selenium makes it easier to machine. Columbium or titanium maintain its corrosion resistance under long periods of heating up to 1200 F.

Origin Of Stainless Steel

Pioneer experiments in developing a steel that would resist rust and corrosion began to give encouraging results shortly before the outbreak of World War I in 1914. In England, Germany, and the United States independent research projects were carried on.

The researchers added nickel to chromium in steel and, after many experiments, they learned that a proportion of 18 per cent chromium to 8 per cent nickel was ideal for a great variety of steel products. This soon became the most widely used grade of stainless steel—the "18-8" designation familiar in many industries.

After World War I stainless steel began to hit its stride in the American market. Commercial production of "18-8" stainless was begun in American steel plants in the middle 1920's.

The new metal had been introduced to this country in cutlery. Its market rapidly expanded, and by late 1926 the mounting influence of stainless steel on many of the basic industries was apparent.

Present Types and Forms

No single analysis of stainless steel satisfies all the many requirements of modern industry. Today there are more than 30 types of stainless steel. Each belongs to one of three major classes: chromium-nickel; chromium, hardenable by heat treatment; and chromium, nonhardenable.

The chromium-nickel grades are normally non-magnetic; the chromium grades magnetic.

Depending on the properties needed for specific uses—strength, heat resistance, corrosion resistance—the amounts of chromium, nickel, carbon and other elements are varied. Each combination has a number, given to it only after a thorough investigation of its properties. Designations by these type numbers are used as standard by both producers and users of Stainless.

Individual steel companies produce stainless steels under their own trade names. Practically all, however, use standard composition and type designations.

Stainless steels are produced in all basic forms common to ordinary carbon steels, such as sheet, strip, plate, bars, tubing, and wire. They may be fabricated into massive vessels designed for chemical plants, or because of their high ductility, drawn into small diameter wire, a pound of which would stretch out for 25 miles.

This versatility makes it possible for the designer to specify a stainless steel to exacting requirements for any one of thousands of applications in an ever-expanding market.

Economics of Stainless Steel

The many advantages of stainless steels have opened new vistas of industrial and commercial development. Its great resistance to heat and corrosion, high strength, enduringly beautiful finish and lasting customer appeal have stimulated the ingenuity of manufacturers and designers.

To the housewife or the building superintendent, the gleaming, easily-cleaned surface of stainless steel means a saving in labor time, as well as durability and beauty.

Economies effected by stainless steel can be measured both in first-cost and by a long-term yardstick. In terms of wearability and long service life, in its slow rate of depreciation, and because costly replacements are virtually eliminated, stainless steel saves dollars over the years.

To give but one example, cracking towers in the sour-crude oil industry once had a life of only four to eleven weeks. With the application of stainless steel, these towers now do their work efficiently for years.

Yet stainless steels often save money on the basis of first-cost, because architects, engineers, and designers know how to take advantage of the high strength of this material. With proper design, sections may be lightened and still provide ample structural strength.

Engineers supplement the inherent high yield strength of specially-processed stainless grades by welding or riveting stiffeners to the structure. These stiffeners provide greater rigidity for the light stainless steel sheets, often making it possible to cut the weight of a product in two.

Because cost is a primary consideration, the stainless steel type selected should be no higher in alloy content than requirements demand. To use stainless steels effectively and economically it is necessary to choose the right type for each application.

Development of the Market

The growth of the stainless steel industry is well expressed in ingot tonnages. In 1929 the figure was 42,000; by 1936 it had reached 101,000 and in 1947 it was over 500,000 tons.

The turn of the decade in 1930 saw the markets for stainless steels becoming more and more diversified. New uses came to life as one industry after another investigated the possibilities of this rustless steel.

The oil industry, confronted with the corrosion problems of mid-continent crude oils, was quick to adopt the new stainless steels for use in cracking towers and other equipment.



Here is another of the attention-getting displays at the exhibit. The electric furnace, depicted by this model, is known as the "cradle of the stainless steels." It provides the quality control that is essential in producing stainless steel.

The dairy, textile, and paper industries quickly recognized its economy and usefulness. Chemical processing industries turned to stainless steel for many large-scale installations. The food industries and dozens of others followed suit.

The strikingly beautiful appearances of stainless steel led to another major development. Walter P. Chrysler had confidence in the new material's rustless qualities when he ordered it as a decorative and protective sheathing for the spire of the Chrysler Building in New York City.

The majestic tower of the Empire State Building also was adorned with stainless steel. For two decades these great skyscraper towers, their brilliant surfaces impervious to time and weather, have done much to popularize stainless steel as a building material.

Automotive Applications

At another important milestone, Henry Ford introduced stainless steel on the dash boards of the Lincoln automobile in 1928, and on the radiator and hub caps of his new Model A Ford in 1930. This marked a sensational advance in the automotive field which others were quick to adopt. Today's automobiles have a dozen or more stainless steel parts in engine and body, which enhance their efficiency and beauty.

In World War II, stainless steel proved invaluable for military uses. Its resistance to rust under the severest atmospheric conditions, and the rigors of tropical and frozen climates, were quickly recognized.

High strength and resistance to heat and corrosion were qualities which established its urgent need on

ships and aircraft. The demands of war resulted in ever-widening acceptance of stainless steel, with a resultant increase in the number of applications. Many of these have since been adapted to peacetime uses. But the development of military applications has continued, especially in rockets, jet-propelled planes and other aircraft.

Development of Production Techniques

The electric furnace is the cradle of all the stainless steels. In the electric furnace the composition of each melt of steel can be controlled to a high degree of precision.

Quality-control continues after the steel is poured into ingots, through every phase of its production. As a result of this precise control, only about 60 per cent of the total weight of a stainless steel melt leaves the mill. The rest is turned back for remelting.

While the steel mills produce only such products as sheets, strip, plates, bars, wire, and tubing, some of these products are highly specialized. Stainless steel strip is supplied thinner than tissue paper (0.001 in.) or in thicknesses that withstand heavy loads. Every effort of laboratory research and the mill metallurgists is directed to the production of materials that will fabricate with utmost efficiency, thus making the job easier for the thousands of manufacturers who make finished products of stainless steel. Stainless steel tubing can be drawn into a hollow hypodermic needle or formed into pipe a yard in diameter.

(Please turn to page 174)

How Paint Behaves — On Galvanized Steel

RICK MANSELL

Process Engineer
Los Angeles, Calif.

WHEN organic finishes such as paints and lacquers are applied to galvanized steel sheets, it is found that their adhesion rapidly diminishes, until the stage is reached at which the finish begins to crack and then peel away, revealing bare patches of the undersurface metal. The problem of preparing the surface in such a way as to enable it to retain the organic finish for a long period of time, is one which has taxed the ingenuity of paint and lacquer engineers. Much progress has been achieved in recent years.

The objective in this article is to present as much as possible of the available information on this topic in such a way that it will be readily assimilated and evaluated by the reader. He, himself, will have to apply the facts presented so as to suit his particular problem and combine these ideas with his own personal experience in this rather wide field; there is still much room left for individual and original research.

Galvanized steel is simply steel which has been dipped in molten zinc. The surface is first cleaned by pickling in sulphuric acid. This is followed by thorough washing. The steel is then passed through a flux of molten ammonium chloride. It is finally immersed in the bath of molten zinc until the sheet reaches the temperature of the bath. As the sheet is withdrawn from the bath it is covered with an adherent coating of zinc.

It is the type of zinc surface produced by this hot-dipping process which causes trouble with organic finishes. Evidently, it is much more reactive than the surfaces produced by other zinc coating methods; such as, Sherardizing, electro-plating, and metallizing (spraying). The zinc coatings obtained by these three latter processes are not as troublesome from the adhesion standpoint.

Sherardized surfaces are produced by tumbling heated articles in metallic zinc dust. They do not produce any adhesion problems with organic finishes as long as the surface is clean and when primers of reasonably good distensibility are used. Zinc metallized surfaces are obtained by spraying molten zinc onto a surface with the aid of an oxy-gas flame, and produce no abnormal finishing problems.

Electro-plated (electro-galvanized) surfaces sometimes produce difficulty due to the presence of occluded gases within the metal deposit. This may cause blistering and peeling troubles whenever baked finishes are applied. It is, therefore, recommended that prior to the

application of the organic finish, the metal be heated to a temperature above that specified for the baking process.

Corrosion

The primary function of the zinc coating is to seal the sheet from air and moisture. The layer of zinc is more impervious than that of the steel, and is much more resistant to corrosion, so that it will have a far longer life than a corresponding layer of steel of equal thickness.

Another function of the zinc coating is to help protect the metal from corrosion. It forms a galvanic couple in which the zinc acts as the anode and the steel as the cathode; thus it tends to prevent the formation of rust when a small area of the underlying surface is exposed as the result of an abrasion injury. This is contrasted with the rapid pitting of tin coated metal under similar circumstances. The tin forms a galvanic couple in which, the iron metal present in the steel is the anode and therefore there is an electrochemical tension encouraging it to go into solution.

As a general rule a thick coating of zinc will offer protection for a longer period of time than does a thinner coating. Unfortunately, heavy zinc coatings on sheets are usually brittle and so cannot be used in those cases where severe fabrication is involved. The average galvanized sheet carries approximately 2.0 ounces of zinc per square foot of its surface, although thicker coatings up to 2.5 ounces per square foot are produced. The coating varies between 3 and 4 thousandths of an inch in thickness.

In the past, certain metals were considered as being subject to corrosion while others were classified as being corrosion resistant. However, it is important to realize that all metals tend to corrode when exposed to the air and its contained moisture. There are other elements in the atmosphere which help to accelerate this process; among these are floating salt particles and sulphur gases.

Aluminum and nickel were once regarded as being completely resistant to corrosion, when in reality as soon as they are exposed to the air they produce upon their surface a thin film of metallic oxide corrosion product. This oxide film, itself, acts as a protective coating and prevents further corrosion of the base metal. In a similar way, zinc produces oxide and carbonate films on its surface when it is exposed, but

these films are not as stable or continuous as those produced on the aluminum and nickel surfaces. The zinc reaction products are gradually worn away exposing other surface layers of zinc to the effects of further corrosion. It is for these reasons that protective coatings are applied to galvanized steel surfaces.

The actual rate of corrosion of zinc is about 0.2 ounces per square foot per annum when exposed to the normal industrial atmospheres. In these atmospheres the coatings of zinc of average thickness would be effective as a rust-proofing barrier only for about five years. However, if there are special factors present in the environment, such as, highly acid or highly saline conditions, then the period of protection may be reduced to less than 2 years. Under these circumstances it is very necessary that organic finishes be applied as a further protection for the galvanized sheets. In the case of rural atmospheres the life of the zinc coating is ever so much longer, and therefore the necessity for painting may be postponed to a later period in its life.

Although under normal conditions of atmospheric exposure the rate of corrosion of zinc is about 20 times less than that of steel, there are some conditions in which the zinc coating corrodes more rapidly. An example of this occurs in the case of the enclosed and polluted atmospheres commonly found in railway tunnels. In these cases the importance of applying organic finishes to galvanized sheets is just as significant as that for uncoated steel.

Apart from the conditions causing corrosion, another factor controlling the painting of galvanized sheets, is the actual thickness of the zinc coating applied to the base metal. For example, taking the case of a heavily coated sheet, it is found that this may be exposed for several years before the application of organic finishes has to be considered.

Organic Coatings

The painting of galvanized steel has long been a headache due to the difficulty of securing proper adhesion. Every city has examples of paint finishes peeling from its galvanized structures. In former years it was the practice to permit galvanized surfaces to remain unpainted for a year or two. This weathering action seemed to provide a surface which was more successful in maintaining the adherence of the paint material.

Furthermore, there have been many washes recommended as well as several special treatments for this preparation. The results obtained with a number of these surface treatments have caused their efficiency to be questioned, because on many occasions peeling has been noted, in spite of the special care taken in surface preparation. As a general observation it has been found that each finishing foreman develops his own particular method of surface preparation based upon his own practical experience.

The performance of organic finishes on galvanized metal (see later section) is much better than that obtained with the galvanized surface. The adherence is more satisfactory and for many types of exposures no special pre-treatment is necessary, apart from the usual precautions being taken to ensure a clean surface free from grease and dirt. A specially formulated

primer is used. These galvanized sheets have a grainy, matte surface, and are non-spangled.

The coating of zinc on the galvanized sheets is in the form of crystalline plates of zinc which are interlaced together producing the spangled sheet with the smooth, greasy feel. This characteristic greasy effect of the spangled sheet is merely one of its general properties, and is not connected with the actual presence of any greasy material (in the manufacture of the galvanized sheet no oil, grease, or soap, or any similar types of material come in contact with it).

Under the microscope the coating reveals minute fissures. These may contain traces of zinc and iron chlorides which are left over from the galvanizing process, but usually the sheets are well washed—completely free from these salts. Any unneutralized acid may cause blistering problems to arise due to reaction with the zinc causing the evolution of hydrogen.

Galvanized sheets are used to fabricate products for indoor and outdoor use. They are used both for industrial manufacturing purposes, and for building construction. However, by far the greatest number of sheets is used for the latter purpose. The major difficulty of securing adequate paint adhesion in the past has not seemed to have hampered the large scale use of this material, although further expansion of their use can be anticipated, resulting from the latest types of pretreatment methods. These are referred to in the next installment.

Adhesion of Organic Coatings

Various theories have been advanced to explain why paint will not adhere satisfactorily to galvanized steel. Some experts suggested that the metal is inherently too smooth physically to afford sufficient anchorage for superimposed finishes, and should, therefore, be roughened. This seemed to be supported by the fact that less trouble is encountered in the finishing of galvanized structural shapes; such as, I-beams, channel bars, etc., provided the usual precautions are taken for producing clean surfaces. Evidently the conditions of galvanizing on these sections are such as to result in the formation of heavier zinc coatings with a rough surface free from the glossy spangles.

Further investigation has indicated that the smoothness of the surface is not the only factor causing difficulty of adhesion, because it has been found that even after a galvanized surface has been roughened by sand-blasting, or etched with acids, and every trace of grease removed from it, that there is still an absence of satisfactory adhesion and the paint finishes will ultimately peel off from the surface.

Others have suggested that the trouble is due to the high coefficient of expansion of the zinc metal. Yet, it is found that highly elastic primers have just as much difficulty in anchoring onto its surface as have the harder types of finishes.

The most popular explanation offered is that the lack of adhesion is due to a progressive reaction between the zinc surface, and the oxidation products of the organic binder of the paint film. Linseed oil and other organic binders, on drying, produce as by-products varying amount of formic and other acids. The suggestion is made that the formic acid combines with the zinc to produce zinc formate; this is a crystalline

(Please turn to page 176)



REVERE COPPER FASCIA PROVIDES LASTING BEAUTY—LOW MAINTENANCE

Another Example of "Copper and Common Sense"

THE new Richmond-Chase office building in San Jose, California, offers striking proof of the versatility of Revere sheet copper. The architects for the building were Wurster, Bernardi and Emmons of San Francisco, the builder was Carl N. Swenson Co., Inc. and the sheet metal contractor was the O. C. McDonald Co. Richmond-Chase Company is one of the largest canning companies in the area; and it was desired that the headquarters office building should be in keeping with the company's position of progressive leadership.

The distinctive architectural treatment includes a copper facing of the roof overhang. It is constructed of 16 oz. Revere sheet copper, $\frac{3}{4}$ " standing seam—2'0" c.c. In addition to this use of copper for its color and beauty, copper was also used for flashing and window sills.

Whenever you design or install sheet copper construction, it will pay you to take full advantage of the new technical data developed by the Revere Research Laboratories. You'll

find these data in Revere's booklet, "Copper and Common Sense." This authoritative manual of sheet copper construction has been widely distributed to architects and sheet metal contractors, and there is probably a copy in your files. Be sure to refer to it as your guide to fine and durable sheet copper construction.

Revere materials are available from leading distributors throughout the United States. A Revere Technical Advisor will always be glad to consult with you without obligation.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere.

"Put 'em in and forget 'em."

The Best Buy in Damper Controls"



THE P-K DIAL REGULATOR

HERE are some of the reasons why so many heating contractors call the P-K Dial Regulator "the best buy in damper controls" . . . (1) The unique frame prevents air leakage, promoting efficient operation of the system; (2) Eccentricity of hole in frame with opening in lever binds the bearing and prevents damper rattles; (3) Lever rotates on frame hub, assuring free and easy operation of regulator; (4) Wing nut locks damper in desired position, yet permits quick re-adjustment; (5) Locking nut with key furnished for tamper-proof installation.

Specify P-K Dial Regulators on your next job. They're a cinch to install—on round or flat surfaces. See why you can "put 'em in and forget 'em". Your nearby P-K distributor will be glad to take care of your order. For folder describing complete P-K line of Damper Controls—write Parker-Kalon Corp., 200 Varick Street, New York 14, N. Y.



PARKER-KALON P-K DAMPER CONTROLS
TYPES FOR EVERY JOB



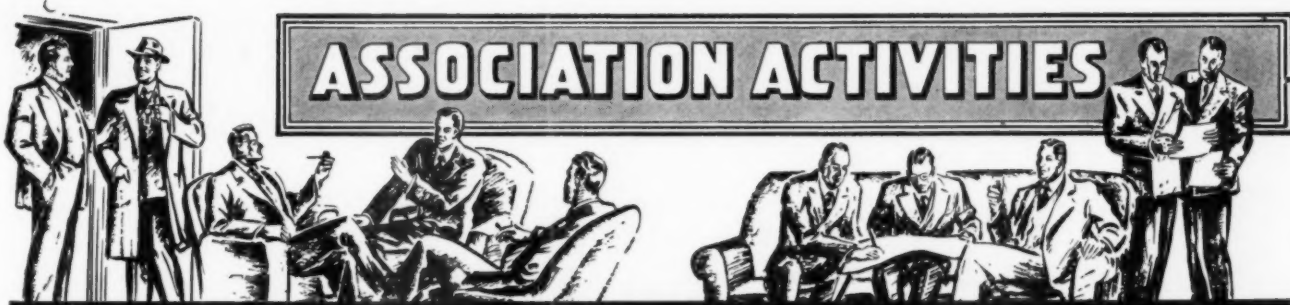
JIFFY REGULATOR

... one of the simplest of all damper regulators—developed to meet a demand for a low-cost device for domestic air conditioning and furnace installations.

UNXLD

... a quadrant type of damper control made of heavy gauge steel or brass with lever of malleable iron or cast brass. Recognized as the "standard" for manually operated damper controls.





Southern California

FOURTEEN members of the Institute of Gas Heating Industries featured the latest in heating appliances and controls at the Third Annual Home and Building Exposition held in Pan-Pacific Auditorium, Los Angeles. The exposition, which closed on June 20, was an unusual success from the standpoint of attendance as well as outstanding display.

Our industry played an important part. Some of the most spectacular displays were devoted to gas heating and a majority of them by members of the institute.

Reports from the Los Angeles Department of Heating and Ventilating show a decided increase in gas heating permits for the first five months of 1948 compared with the same period a year ago. For this period 1948 permits totaled 12,212 and in 1947, 10,074—a gain of 2,138.

A recent ruling of the Los Angeles Building and Safety Commission permits the use of aluminum in place of galvanized steel for air ducts provided dampers are installed every 50 feet and the material is 24 gauge.

The institute is holding again this year a training course for gas heating servicemen. It will be eight weeks in duration and under the direction of M. P. Stillinger and B. F. McMahon, dealer service representatives of the Southern California Gas Company.

Enrollment is open to all institute members and their employees without cost.

Two evening classes will be held each week beginning September 13 and 14, and closing November 1 and 2.

Subjects to be covered include utilization of gas fuel, fundamentals of controls, specific operational and servicing of all types of heating equipment, wiring, and discussion and interpretation of heating and gas piping ordinances.

Opportunity will be afforded for actual operation of working models of equipment and controls; also lectures will be supplemented by actual demonstrations.

ERNEST W. KIMMEL

Managing Director
812 South Robertson Boulevard
Los Angeles 35, California.

Canada

THE Canadian Chapter of the National Warm Air Heating and Air Conditioning Association has received many inquiries from members who have obtained copies of manual No. 7-A, *Warm Air Ceiling Panel Systems*, requesting clarification of the following notation on the inside cover:

Since the use of this system involves a patented product, licenses for the use of the ceiling warm air panel construction shown in this manual may be obtained through your furnace supplier.

It has been learned from correspondence with the International Heater Company, Utica, New York, who holds the patent rights, that the patent applies only to the United States. Therefore, warm air heating contractors may install warm air ceiling panel systems in Canada without obtaining a license.

During the past few months the Board of Directors has approved applications for manufacturer memberships from the following:

Lakes Limited, Vancouver, British Columbia, manufacturers of warm air furnaces.

B. D. Wait Company, Limited, Oakville, Ontario, manufacturers of humidifiers.

Thompson & Sutherland Limited, New Glasgow, Nova Scotia, manufacturers of warm air furnaces.

This increases the manufacturer membership in the Canadian Chapter to 26.

C. B. TAYLOR

Managing Director
Yonge at Deloraine
Toronto 12, Ontario.

COMING EVENTS

Sept. 13-17—Instrument Society of America. 1117 Wolfendale St., Pittsburgh 12. Third National Instrument Conference and Exhibit. Convention Hall, Philadelphia.

Oct. 4-9—American Gas Association. 1948 Convention. Technical Section—Ambassador Hotel; Residential Gas, Industrial and Commercial Section—Ritz-Carlton Hotel; Accounting Section—Haddon Hall. Major T. J. Strickler, Chairman, Convention Committee, c/o The Gas Service Co., Kansas City.

Oct. 13-16—National Association of Housing Officials. 1313 E. 60th St., Chicago 37. 15th Annual and 3rd Exhibit. Olympic Hotel, Seattle.

Dec. 5-8—The American Society of Refrigerating Engineers. 44th Annual. Hotel Statler, Washington, D. C. C. F. Holske, President, 40 W. 40th St., New York 18.

Feb. 3-4—31st Annual Convention. Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc. Write Homer Selch, 944 Hosbrook St., Indianapolis 3.

WHOLESALE DEALERS SEEK STEEL FOR DEALERS

Delegates discuss with Mathias Niewenhaus dealer's need for sheet steel to install heating equipment provided for under the Voluntary Industry Agreements Program.

THE first mid-year convention of the National Heating Wholesalers' Association, held June 28, in the Edgewater Beach Hotel, Chicago, was noteworthy for its timely program and for the amount of serious business successfully conducted at the sessions, to the profit of all concerned. All discussions were pointed toward the solution of current business problems.

President A. H. Johnson of Pittsburgh opened the meeting with a short report in which he pointed out the progress the association had made. According to the report, the association has gained 28 new member firms since its last meeting in December, has been successful in balancing inventories among the members through its inventory interchange system, and has gone far in securing a better understanding by manufacturers of the position of the heating wholesaler in the chain of distribution and in convincing at least three large and prominent manufacturers that wholesale distribution is more economical and efficient than any other method. A movement has been started toward securing an allocation of sheet steel for heating wholesalers and their trade under the Voluntary Industry Agreements Program. He reported the association's finances as satisfactory despite the heavy expenses from the expansion of activities and that a greater membership, giving added numerical and financial strength to the association's efforts, is still desirable.

All Wholesalers Benefit

"All heating wholesalers," he announced, "or managers of heating departments of wholesale distributors will benefit by the work of the association. They are welcome and if they will join with us, we can accomplish a lot more in the next few months of preparation for a buyers' market than we have in the last six months since our December meeting. We have recently moved our headquarters to the center of the local wholesale district in Pittsburgh, where our secretary stumbles over furnaces and boilers all day, and with Jules C. Berger's Membership Committee sending us regular reports, we really have our finger on the pulse of the industry. But it still takes physical strength and financial stability as well as technical knowledge and understanding to be a good doctor. We would like to be a good doctor to an industry that, despite its present progress and profits, you and I know to be slightly sick in spots. Let's have more active members."

Following the president's report, Dr. Lorin G. Miller of Michigan State College spoke on the subject of "Engineering Service Education From Wholesaler to Dealer." Dr. Miller observed that modern heating units, controls, accessories, and equipment are rapidly coming to resemble radar in their complexity and in

the technical knowledge required to correctly install and maintain them. The engineering "know-how" to install and maintain these complicated new developments must be widely disseminated to all reputable dealers, and the burden of such training falls logically upon the wholesaler who is the manufacturer's local point of contact. To guide and help the wholesaler in his attempt to discharge this obligation in a more satisfactory manner than heretofore and at an expenditure more consistent with his ever narrowing margin of profit, Dr. Miller proposed that a new and more effective training program be developed.

"Merchandising in Today's Market" was the subject of an excellent address by D. D. Couch, American Radiator and Standard Sanitary Corporation. He maintained and proved his point that today, during the seller's market, is the time to actively merchandise, push sales, and establish new markets with every selling technique available while the market exists and before it is drained off by others with merchandise to offer.

Owen Anderson of Marsh and McLennan, Incorporated, insurance brokers, Chicago, in his talk "Products Liability Insurance," described the value of inexpensive protection against lawsuits and possible bankruptcy of a wholesaler's business due to simple failure in the operation of some heating unit.

The luncheon address, enthusiastically applauded by 125 heating wholesalers, was capably delivered by Edwin B. Moran, National Association of Credit Men. Speaking on "Coordinating Sales and Credits for Maximum Distribution," Mr. Moran drew from the depths of his experience as a credit and sales executive to advocate a new attitude toward credit management. He advised the consideration of bad debts, not as a loss that should be totally avoided, but as an active expense of selling and holding and expanding the market. The percentage of sales income that could be allocated to this expense and the result in sales to be expected from it, should be pre-determined in a top management conference of sales and credit executives. Then the credit and sales departments should thereafter work together to maintain that ratio and protect and expand sales in so doing, rather than use the present system of working separately and apart to sabotage sales and kill markets by a rigid credit policy.

After luncheon, W. L. McGrath, Williamson Heater Company, Cincinnati, told the audience "What the Manufacturer Expects of the Wholesaler." The wholesaler, he said, acts as the manufacturer's local warehouse and stocking point, his credit department, a branch of his sales department and of his training, engineering, and service departments, his local point of community and public relations, and his complaint



Harold J. Ruttenberg



John W. Boatwright



W. L. McGrath

and return department. He is supposed to and expected to do all these things as well as or better than the manufacturer himself could do for each manufacturer whose product he distributes. Mr. McGrath personalized a great part of his discussion with specific references to the expectations and manufacturer-wholesaler relationships of his own company, highlighting the discussion with examples from his company's wholesale "laboratory."

In a symposium on "Current Business Worries," J. E. Eckstein of J. E. Eckstein Company gave an explanation of some Fair Trade legislation and recent court decisions in the case of the Morton Salt Company on quantity discounts and the "Cement Case" on freight absorption. Then John W. Boatwright, Standard Oil Company of Indiana, discussing the "Outlook for Oil," told the delegates, "—petroleum supplies will probably continue to be tight during the next ten months at least," and urged them to devote sales and advertising emphasis primarily to the oil burner replacement market, thus continuing profitable sales for the heating trade and at the same time eliminating some of the worst oil hogs in existence last year. Following Mr. Boatwright's clear analysis of the fuel oil situation, Harold J. Ruttenberg, Portsmouth Steel Corporation, authority on the economics of the steel industry, delivered a very complete analysis when he discussed the "Outlook for Steel." "Steel," said Mr. Ruttenberg, former CIO economist and statistician, "is in critical supply right now and has been ever since the war, and every reason exists to predict higher prices and an even greater scarcity. Steel producers will not and cannot even replace presently wearing-out capacity out of their steadily dwindling margin of profit in the face of a cost of approximately \$300 per annual ton of new capacity compared with \$100 in the pre-war period." He then went on to explain other cost and capacity factors and urged everyone to take every necessary step to conserve steel and to increase the flow of scrap iron to the mills.

In a closed business meeting following the open sessions, members voted to accept one new application

for membership from a Texas firm; confirmed the appointment of A. S. Welant of McPherson Furnace and Supply Company, Portland, Oregon, to the Board of Directors; approved the excellent reports of Charles Bird, Cincinnati Supply Company, for the Trade Relations Committee and Jules C. Berger, Metals Service Company, Green Bay, Wisconsin, for the Membership Committee, and also the financial report of Treasurer Fred R. Green, Des Moines Stove Repair Company, Des Moines, Iowa.

Steel for Dealers

Later, the delegates had an informal round table discussion with Mathias Niewenhous, Chief, Building Materials Negotiating Division, Office of Industry Cooperation, U. S. Department of Commerce. Mr. Niewenhous discussed the operation of his agency and informed the wholesalers that the Attorney General and the Secretary of Commerce had just approved the voluntary allocation of 233,000 tons of steel products during the next eight months for the production of heating equipment to 450 eligible manufacturers of warm air furnaces, including jackets and casings, flue-connected floor and wall furnaces, registers and grilles, furnace blowers, furnace pipe, and pre-fabricated fittings and ductwork. He expressed amazement at the information from the delegate wholesalers that all this would be ineffective in providing heating for the Administration's housing program unless sheet metal were also provided for shop-built plenums, fittings, and ductwork. He suggested that the association gather and present accurate data on this requirement for consideration by the Industry Committee. The delegates also discussed with Mr. Niewenhous, the need for pipe in connection with both warm air and boiler and radiation heating, and decided to take some action on this subject as soon as the sheet metal survey was completed.

In the evening, all registered delegates and their ladies, who had just returned from a sight-seeing tour of Chicago, were the guests of the American Radiator and Standard Sanitary Corporation at a cocktail party.



F. L. Meyer

G. A. Voorhees

NWAH & ACA DISCUSSES RESEARCH OIL BURNERS STEEL

REPORTS on current research programs at the University of Illinois and discussion on the steel allocation program and oil supply claimed the attention of the 1948 mid-year meeting of the National Warm Air Heating and Air Conditioning Association held June 29, in Edgewater Beach Hotel, Chicago. A lighter form of business claimed attention on the second day, June 30, scheduled: "all for fun." This included a variety of pastimes and pleasant moments for the large group who remained and participated in the extra-curricular activities.

Following custom, the association's busy committees met June 28, the day prior to the meeting, and reviewed the continuously flowing programs before them. Membership on these committees demands time and expense and in many cases devotion to study of the problems confronting the industry.

Each chairman constantly reminds the industry that his committee is always open to suggestions from anyone who wishes to present a problem for consideration. There is an everlasting need for expression from the field. While each committee member has alerted himself to situations that arise and the needs of the in-

dustry, warm air heating contractors who are in daily contact with local conditions and the public at large are in a position to make invaluable suggestions with respect to the needs for research, codes, education, engineering, and publicity.

Research Reports

The first morning session was allotted to reports on research projects. In his account on research of warm air ceiling panel heating, conducted in the association's new Warm Air Research Residence, R. W. Roose, special research assistant, disclosed a small advantage in room gradients favoring ceiling panel over conventional winter air conditioning. The difference between the floor and the 30 in. level amounted to less than 1 F for the panel and a little over 2 F for the conventional application. In each case the basement was warmed by radiation losses of the furnace in the basement.

A floor panel system is not available in the residence for comparison.

Of considerable import at the moment is the fact that the panel system required 20 per cent additional



Scenes at the tired happy gathering in the clubhouse after the golf tournament.



At Olympia Fields

Top—E. D. Mott, L. W. Walquist, and R. A. Lorenz.

Top—W. Hearne, H. Himeblau, W. Smith, Jr., and R. J. Woodward.

Center—Robert J. Lorenz after receiving highest award for a low gross of 78.

Bottom—F. L. Meyer, C. E. Price, C. S. Franke, and A. Galaba.

Bottom—T. A. Johnson, T. Ferrara, and F. R. Bishop.

fuel, apparently due to the increased heat loss from the upper side of the panel to the attic.

Later, several comments from the floor questioned the influence on comfort from the lack of air circulation, cleaning, humidification, advantages often cited as favorable to the public acceptance of winter air conditioning systems.

M. E. Childs, special research assistant, told of the performance of an extended plenum gravity warm air heating installation in a residence of the Small Homes Council.

In his opinion, satisfactory gradients between the floor and the 30 in. level substantiate that level ductwork of proper design will result in performance as satisfactory as conventional individual pipes pitched from the furnace to the register. In the system tested the plenum was extended to within 3 in. of the bottom of the joists and this level was held the same throughout the extended plenum.

Mr. Childs illustrated his discussion with slides and the compactness of the duct design was apparent.

A report substantiating opinions of some observers previously published in *AMERICAN ARTISAN*, that the heat loss from uninsulated slab floors is an important factor that cannot be disregarded in basementless homes, was presented by H. D. Bareither, instructor at the University of Illinois.

Tests with different types of slab construction indicated the greatest loss occurs at the edge and for a distance of 3 ft from the edge.

Mr. Bareither called attention to the need and value of vapor barriers and that the common gravel fill is not an insulator.

Oil Equipment Potential

After telling his audience that the hysteria over last winter's fuel oil supply has subsided, W. A. Matheson of Eureka Williams Corporation, active chairman of Oil Heat Institute's Publicity and Legislative Committee, spoke of the need to sell oil heating equipment to achieve the industry's sales goals.

Oil burner sales this year are expected to total somewhere between 500-600,000. This figure, Mr. Matheson said, is based on sales of 350,000 *new* installations, 150,000 *replacement* installations, and 50,000 installations made possible because of fuel conservation measures and replacement of fuel wasting equipment. Both the petroleum and oil burner industries are in accord on the soundness of this goal for the current year.

Only by comparison with last year's nearly 880,000 installations could the expected 1948 total of between 500-600,000 be considered unsatisfactory because the most optimistic wartime predictions had 1948 slated to be the industry's *first* 500,000 year. Even at its seemingly subdued 1948 rate oil heat is still an industry of destiny—an industry that, by the end of 1950, will have sold better than a billion dollars worth of equipment.

"The warm air record in oil equipment to date offers

an interesting study," he said. "In 1946 when material shortages so acutely plagued us all, the sale of 62,000 furnace-burner units was predicted. Actually there were 38,602 units sold. But with 103,000 sales predicted in 1947, 143,154 furnace-burner units were actually sold. Oil fired furnace-burner units were not slated to reach the 142,000 mark until this year—1948. Warm air, too, is ahead of schedule!

"At all levels, manufacturing, distribution, retail selling, installation and service," Mr. Matheson continued, "we must accept an entirely new concept of fuel oil. Not as a cheap, practically worthless by-product, but as a full-fledged unit of our petroleum economy.

"Now—as never before—it is squarely up to every man in oil heating to see that the user of oil heating equipment gets 'More heat per dollar—with fewer gallons per season.'"

In his opening address, President Atlee Wise stated that the voluntary steel and iron allocation program appears to have two basic advantages: One, in making available a more liberal supply of steel; and two, making it possible for manufacturers to purchase steel at regular mill prices. He expressed the hope that the program would result in the savings of millions of dollars to the warm air heating industry and thus help in holding the line on housing costs.

Dealer Memberships Climb

Mr. Wise reported that as of June 15, the dealer membership had increased to 741, which figure is about 500 in excess of last year. Many manufacturers and wholesalers have gone out of their way to back up the dealer program which was adopted to develop closer relations and to create higher ethical, business, and

installation standards.

Frank L. Meyer, Meyer Furnace Company, Peoria, outlined current and future activities of the Research Advisory Committee and commented on public interest in the new Warm Air Research Residence.

Steel Allocations

At the time the problems of steel supply for central warm air heating were explored, Mathias W. Niewenhous, Chief of the Building Materials Negotiations Divisions, Department of Commerce, stated that the study of floor and wall type furnace had not been completed. That segment of the industry has asked to be included and additional tonnage for this type equipment has been requested.

Among the accomplishments of the Office of Industry Cooperation Mr. Niewenhous referred to the allocation of 212,000 tons of steel for manufacturers of warm air heating equipment for housing.

All for Fun

Close to 75 golfers and non-golfers spent the second day at Olympia Fields. After the competition on the links was over, all assembled for an evening dinner and dispensing of prizes. Both golfers and non-golfers shared in the stakes, the former for their prowess on the fairway and the latter for their prowess at—anything.

Robert A. Lorenz had first choice of the assembled prizes, with a low gross of 78, and was followed by York Balcom who was accredited with a low net of 71 under the Peoria system. Fred R. Bishop's—very high—high gross was not overlooked, for after all, honesty is a virtue.

Association Activities . . .

Indianapolis

AT THE July meeting, the following officers were elected:

Ralph E. Mullen.....President

Donald S. McCloskey.....Vice President

Frank E. Stewart.....Secretary-Treasurer

Directors are: H. D. Boyd, Charles H. Buck, M. L. Connell, William E. Garber, Jr., R. A. Hoyt, E. P. Love, C. J. Novak, and T. M. Rybolt.

DONALD S. MCCLOSKEY

Vice president
1618 East Washington Street
Indianapolis, Indiana.

Indiana

THE mid-year edition of the bulletin of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc., will be mailed shortly after the July meeting of the Board of Directors. The bulletin is devoted to inner activities of interest to sponsors and members. All should carry a copy for association information.

The 31st annual convention is definitely scheduled for February 3-4, 1949. Suppliers should write Homer Selch, 944 Hosbrook Street, Indianapolis 3, Indiana, for information.

FRANK E. ANDERSON

Secretary
439 South 17th Street
Terre Haute, Indiana.

Rochester, New York

IN MID-JULY, members of the Master Sheet Metal, Furnace and Roofers' Association of Rochester, New York, journeyed to Millersport where they met with members of the Buffalo and Niagara County associations and the Merchandisers' Auxiliary for a joint picnic.

This was the first joint picnic of the three associations and the first time Rochester has had its picnic on dry land in about 10 years.

Motion pictures of the affair were taken by the secretary and will be shown at a future meeting of each group.

RICHARD W. FRIDAY

Secretary
779 Maple Street
Rochester, New York.

EQUIPMENT DEVELOPMENTS

Incinerator167

A fuelless incinerator—the No. 2 Economy—provides a convenient, safe, sanitary and odorless way of burning all wet or dry garbage and other refuse. The waste itself serves as fuel.



A down-draft system draws air from the top through the refuse, which dries it as it burns—or even when not ignited.

The unit is designed to fit in any basement or utility room—any place where it can be connected to a 6-in. or larger flue.

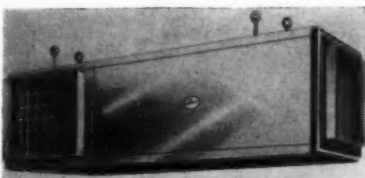
The No. 2 Incinerator has an outer casing and ash cleanout door of heavy gauge steel. Top and lid are of cast iron. Lid swings to side for ease in filling, and has an adjustable draft control. Inner grate lining is built up of steel rods electrically welded and is hung in the double-walled housing by means of inside hooks.

The No. 2 incinerator is finished in hammered metallic bronze-brown.

The Majestic Company, Huntington, Indiana.

Suspended Furnace168

A suspended oil-fired furnace of 100,000 Btuh capacity weighs less than 500 pounds and is completely assembled at the factory. The burner is mounted and wired. It is only necessary to hang the unit in place, install the oil piping and provide the electric power supply. Duct work is usually short and simple.



The counterflow principle of heat transfer is employed.

The air to be heated is drawn through filters by a powerful blower, two large cold air openings provide ample area for return circulation.

Use Coupon on this page

The oil burner employed is the Gilbarco GCS, equipped with the Economy clutch.

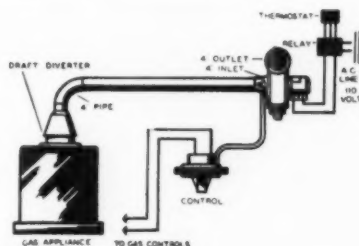
The unit is finished in two-tone green enamel.

Gilbert & Barker Mfg. Company, West Springfield, Mass.

Mechanical Chimney169

The Republic Shure-Vent mechanical chimney has been developed so that the flue products of gas-fired appliances can be safely vented when the ordinary chimney cannot safely vent the equipment or when a chimney is not available.

This unit can be adjusted to develop the exact amount of draft needed to properly vent the flue products. This adjustment eliminates over-ventilation.



The Republic Mechanical Chimney incorporates the qualities of assured evacuation, simplified installation, long life and ease of service.

Autogas Company, 2153 Fullerton Ave., Chicago 47, Illinois.

Packaged Furnaces170

Three automatic oil-fired packaged furnace units and a new conversion burner—all assembled and wired for installation—are available.



Model 388, All-Purpose furnace, is a winter air conditioning system, with a squirrel-cage type blower. Bonnet output is 82,000 Btuh. Floor space required is 33½ x 56 in. and 55 in.

in casing height. This unit may be used as a gravity system without the blower, requiring a floor space of only 28 x 33½ in. The blower may be installed underneath, right, left, or rear.

Model 378 is designed for utility room installation.

Floor furnace Model 458, is 24 in. wide, and may be installed between floor joists. It is 39 inches deep, with an output of 50,000 Btuh.

Oil Burner Model 598 will convert most types of furnaces to thermostatically controlled oil heat. A feature is the telescope air duct which allows all external controls to fit closely against the furnace. The unit has a firing rate of one gallon per hour, providing maximum bonnet output of 70,000 Btuh.

Evans Products Company, Plymouth, Mich.

MAIL THIS NOW!

We will ask the manufacturers to send full particulars about the products and literature mentioned. 8-48

Equipment Developments

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Manufacturer ☐ Jobber ☐ Dealer ☐

Name

Company

Address

Address: AMERICAN ARTISAN, 6 North Michigan Ave., Chicago 2, Illinois

EQUIPMENT DEVELOPMENTS

Use Coupon on Page 117

Grease Filter171

Alumaloy grease filters, of all aluminum construction are available for bright metal range canopies and ventilating systems. The filtering media consists of layers of



aluminum foil, slit and expanded to an engineered pattern to provide many baffle surfaces.

Performance provides protection against damage to motors and blowers in exhaust systems. In addition, the filters keep the duct system clean and free from accumulations of inflammable material, a hazard in kitchen ventilating systems.

This filter is easily cleaned in hot, soapy water. Standard size steel holding frames are available, also.

Research Products Corporation, 1015 E. Washington Ave., Madison 3, Wisconsin.

Hacksaw Frame172

The one-piece steel tube back of the Rigid Hacksaw frame fitted into the precision-machined cast-aluminum handle, permits tightening the blade to high tension.



Alignment is further assured by machined blade holders, whose squares are received by accurately

milled slots. The handle gives a comfortable, firm grip, and is designed so that the thrust is directed behind the blade. The frame is adjustable for 10 and 12-inch blades. All steel parts are cadmium plated.

Dept. A—102, Machine Rebuilding Co., 2738 Chene St., Detroit 7, Mich.

Heating Controls173

A Magic Dial thermostat, Series 165, is designed to operate with the full line of Perfex primary controls in oil, gas, stoker or hand-fired coal heating installations.

Both temperature and cycling adjustments are made on twin dials, surmounting the thermostat case. A wide range of cycling adjustments from a short to a long "on-heat" period can be made on the upper dial.

Outstanding features are the enclosed twin contact switch and a separable wall mounting plate, which serves as the wiring terminal and permits easy installation.

Series 404 warm air limit control, Series 454 fan control, and Series 474 combination fan and limit control, are also being introduced. Each



features simplified design and completely enclosed twin contact switches to eliminate contact failures caused by mechanical damage and interference from dust, grease, lint and foreign matter.

Perfex Corporation, 500 W. Oklahoma, Milwaukee 7, Wisconsin.

Tubing Truck174

A 4-wheel hand truck has been designed for handling pipe tubing, bar stock, rods, etc.



The Rol-Away tubing truck is made of welded aluminum tubing. It is lightweight, has four steel casters which permit it to roll in any direction. It is 6 ft. long, 24 inches wide, and 34 inches high.

Loads are carried on a U-shaped rack between upright standards.

Beall Pipe and Tank Company, 1945 N. Columbia Blvd., Portland 3, Oregon.

Combustion Chamber175

An adjustable, combustion chamber for reconversion when it is necessary to insulate the ash pit is



made of Inconel—a nickel alloy.

The blast tube opening is adjustable and assures snug fit. One-piece construction eliminates excess air and decreases stack temperature. Insulation back-fill is unnecessary when used in regular oil-fired furnaces.

Oil Equipment Mfg. Corp., 75 Brewster St., New Haven 6, Conn.

Cleaner Demonstrator176

A miniature electronic air cleaner called the smoke demonstrator is being used advantageously by agents for both home and industrial precipitators.



The unit includes a detachable plexi-glass chimney containing small collector plates. When a lighted cigarette is inserted in an opening at the bottom of the demonstrator, tobacco smoke flows freely out through the glass chimney, until the precipitator is switched on. Then the smoke begins to disappear halfway up the chimney as it is electronically precipitated on the plates.

Raytheon Manufacturing Co., Waltham, Mass.

Wall Heater177

A gas-fired forced air wall heater, with floor-level warm air discharge has been designed to end the cold floor problem in basement-less homes.



This "Panelair" vented heater in a compact casing, measures 29 $\frac{3}{8}$ in. across the front and 9 $\frac{3}{8}$ inches from front to back. It can be fully or partly recessed in a wall and in direct contact with wood. Warm air discharge is possible from all four sides.

Two fans draw return air from the ceiling and heated air is forced out near the bottom through small grilles, the only portion of the "Panelair" showing in living areas.

Fans and electric motors are vibration-insulated; the heating element "floated" to absorb expansion stresses and burners designed for quiet operation on any type of gas fuel. Operation is fully automatic.

Payne Furnace Co., 336 N. Foothill Road, Beverly Hills, Calif.

Time Switch178

Type T-47 time switch, rated 35 amperes at 115 and 230 volts and timed and operated by a synchronous, self-starting, permanently



lubricated Telechron motor, has wide application for regulating lights, controlling ovens and other small equipment, and is low-cost.

The switch has a single-pole,

single-throw mechanism with large, silver, snap-action contacts. It is equipped with a large 24-hour clock dial.

Operation can be manual or automatic. Adjustable, switch-tripping clamps permanently attached to the dial are used for setting the switch for automatic operation. These clamps allow a minimum setting of five minutes and a maximum setting of 22 hours between ON and OFF operations. Manual operation of either ON or OFF is possible independently of automatic settings already placed on the dial. The switching cycle is resumed automatically after the hand operation is completed.

Meter and Instrument Divisions, General Electric Company, 1 River Road, Schenectady 5, N. Y.

Spot Welding Gun179

Standardized spot welding guns, designed and constructed from interchangeable standardized component parts, have been announced. Seven basic gun types in heavy duty and standard duty versions, are expected to take care of 95 per cent of all gun welding requirements.

Basic components are the gun



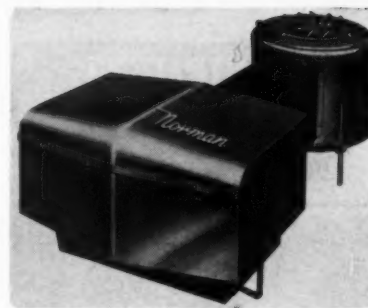
chassis, the "jaw extensions," the interchangeable hydraulic or air operating cylinders, optional cable locations, handles, and "universal" cable terminal clamps, switches, electrodes and electrode holders.

With this standardization of component parts, it is possible to obtain as many as 57,600 practical variations with a single basic gun chassis, while varying only the jaw extensions and standard electrodes.

The guns are designed to take interchangeable hydraulic or air operating cylinders.

Cooling tubes are cast integrally in the gun chassis.

Progressive Welder Company, 3050 E. Outer Dr., Detroit 12, Mich.



Combination Burner180

The TWINfuel combination gas-oil conversion burner is being marketed.

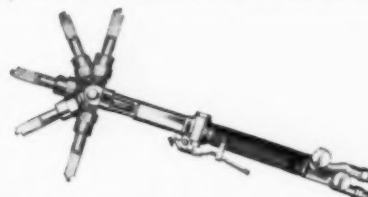
A sealed outside thermostat is set at a temperature above the gas company's peak load and automatically switches from gas to oil as the temperature drops below this predetermined and locked setting. The burner switches back to gas when the cold snap is over.

The TWINfuel burner operates on natural, manufactured, mixed or LP gas or No. 1 or No. 2 fuel oil.

Norman Products Company, Inc., 1150 Chesapeake Ave., Columbus 8, Ohio.

Welding-Cutting Torch...181

Cristorch, a welding and cutting torch, has a flexible head that can be revolved through an arc of 180 deg. It will cut metal of from 1/32 to 4 inches. It will cut holes and circles from 3/8 to 30 inches in diameter with an accuracy to within 1/64 in. It cuts countersunk holes



and bevels one or both sides of a straight cut in a single operation.

The torch executes clean and accurate grooving operations, cuts the heads from rivets and bolts without blemish to the surface of the work area.

Cristorch features a side-opening tip lock-nut. One turn of this nut releases or tightens the tip.

The valves are constructed as complete assemblies and may be removed from the body of the torch for inspection and repair.

The Hamilton Tool Company, Ninth St. at Hanover, Hamilton, Ohio.

EQUIPMENT DEVELOPMENTS

Use Coupon on Page 117

Coupling Kit 182

A 32-piece repair kit, designed to enable service men to repair any standard oil burner, has been placed on the market.

Neoprene cushion material gives the couplings resistance to the action of petroleum derivatives



which cause rubber to disintegrate, while retaining the vibration dampening qualities of rubber.

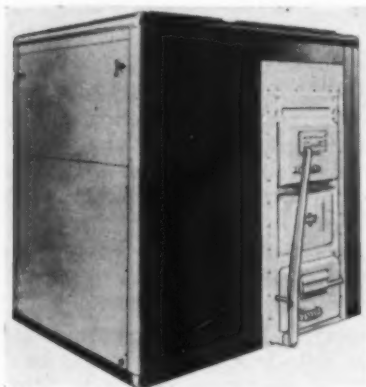
Two splined hub adapters to fit shafts from 5/16th to 5/8ths inches are included. Adjustments can be made for distances from 1 3/8 to 5 1/2 inches between drive and driven units.

The container is of steel with baked-on crackle finish. Inside lid has space for dealer imprint.

Lovejoy Flexible Coupling Company, 5001 W. Lake St., Chicago 44, Illinois.

All-Fuel Furnace 183

A multi-fuel furnace, in sizes small enough for a five-room and large enough for the ten-room



house, will operate either hand-fired, stoker-fired, or with conversion oil or gas burners. The unit is designed so that even after installa-

tion, it can be easily changed over from one fuel to another.

The all-purpose unit provides complete winter air conditioning, the furniture steel cabinet is smartly styled and attractively finished. The blower may be installed in either side of the cabinet.

The furnace is available in sizes from 105,000 to 172,000 Btuh at the bonnet. Gravity models, from 88,150 to 154,000 Btuh at the bonnet, are also available.

Stokol Stoker Company, Inc., 21st & Northwestern, Indianapolis 7, Ind.

Floor & Wall Furnaces . . . 184

A shallow model Lo-Boy furnace is 26 1/2 in. deep overall for installation below low floors. It is available in both dual-wall and floor models.

Dual-wall models feature the new Bi-Flo register head, which eliminates floor grilles.

Model Nos. 25, 30 and 35 FF are



only 14 in. wide, permitting installation without cutting floor joists.

Features of both models are: single rod control valve, made possible by interlocking action of pilot and main burner; heavy duty cast iron high primary air slotted burners; downdraft diverter; streamlined steel heating element, welded into one piece.

All models of the new Lo-Boy are AGA approved.

Fraser & Johnston Company, 725 Potrero Ave., San Francisco 10, Calif.

Remote Tank Gauge 185

A remote indicating oil burner tank gauge, Model 3185-3186, is announced. The driver carries a dial indicator in the truck, plugs in on a jack on the outside of the building, and reads the oil level. As the tank is being filled, a constant indication is given, the maximum capacity of the pump can be used and



delivery slowed as the level reaches the upper three or four inches of the tank.

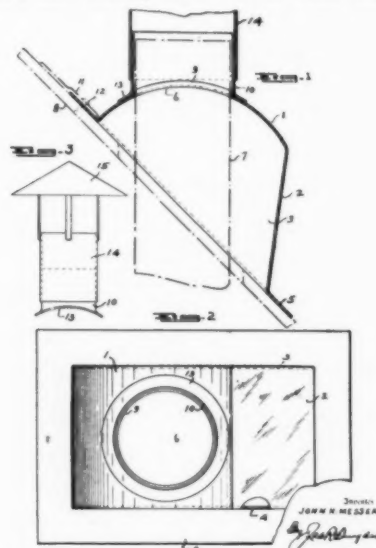
The instruments are individually calibrated to provide an outage of from ten to fifteen gallons.

A magnetically-driven resistance coil is incorporated in the head of a tank gauge unit. The electrical energy is supplied by two batteries in the dial indicator.

Rochester Manufacturing Co., Incorporated, 66 Rockwood St., Rochester 10, N. Y.

Chimney Jack 186

A surround for any type of flue projection comprises a bottomless, sheet metal box structure having a curvilinear adapter top of uniform radius. The pitch of the roof will

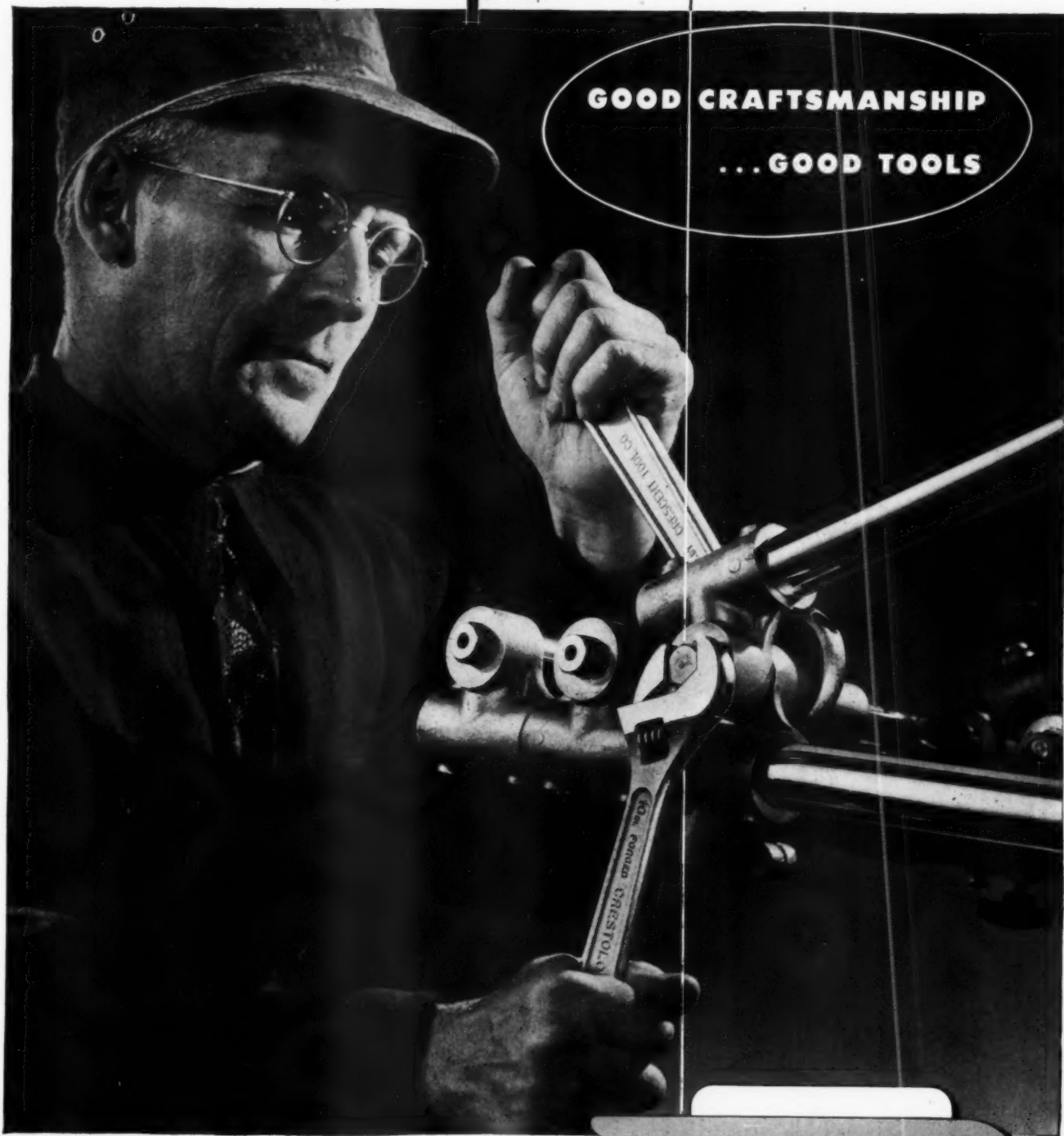


determine the location of the opening in the adapter top.

An outwardly projecting flange is carried by the device for securing the latter in position on the roof, and a flue collar for the passage of the flue projection is fixed to the adapter top to surround the opening.

John H. Messer, 7240 Bennett St., Pittsburgh, Penn.

Inseparable

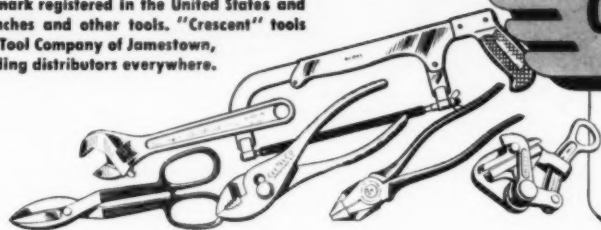


GOOD CRAFTSMANSHIP

...GOOD TOOLS

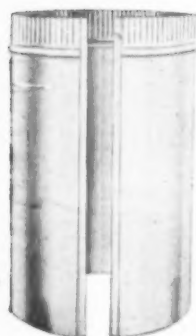
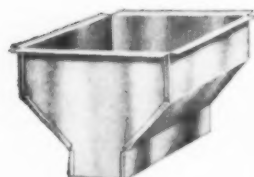
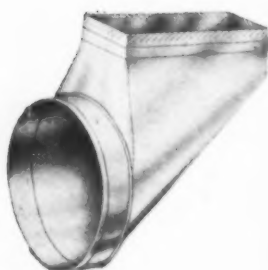
"CRESCENT" is our trade-mark registered in the United States and foreign countries for wrenches and other tools. "Crescent" tools are made only by Crescent Tool Company of Jamestown, N. Y., and are sold by leading distributors everywhere.

CRESCENT TOOLS



*Sign of the Artisan
Symbol of Excellence*

Showing just a few
Char-Gale fittings



CHAR-GALE ALUMINUM *Fittings*

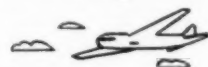
THE ANSWER TO SUCCESSFUL
AND PROFITABLE FURNACE
INSTALLATION

Feather Light



The easiest handling fittings ever made! Cut strain and time on installations—cut transportation time and cost—cut handling time on the job.

Stronger - Longer Lasting



Rustproof clear through! Installations are stronger with aluminum—last years longer.

Better Looking



More customer satisfaction! The smooth, bright beauty of these fittings does not discolor with heat or time. Needs no painting or covering—just naturally beautiful.

And It Costs No More!



MINNEAPOLIS
OMAHA

ANOTHER PRODUCT OF CHAR-GALE METAL CRAFTSMEN

"NO HEATING PLANT IS BETTER THAN ITS INSTALLATION — NO INSTALLATION CAN BE BETTER THAN ONE OF CHAR-GALE FITTINGS"

HERE'S AN AMAZING STATEMENT



YOU CAN SHOW **SUBSTANTIAL** FUEL SAVINGS ON PRACTICALLY
EVERY OLD BURNER IN YOUR TERRITORY BY REPLACING WITH

HEIL

Automatic Heat

Ten to one, new Heil units will exceed in efficiency *any old burner in your territory*. That's a strong statement—but a true one—and when you tell it to your prospect you've got not only your foot, but a new Heil unit in the door. When you show your prospect how Heil can slash his gallonage—and his fuel bill—by 20% to 40%, you have a sale. Count the number of old burners in your territory... there's your Heil market. It's tremendous, it's easy, it's profitable.

HEIL UNITS USE LESS FUEL

New Heil units burn oil more efficiently, extract more heat from combustion. Better design plus quality construction make the difference. Heil units are pre-assembled and pre-wired for a bonus in time saved for you. For full details about the fast-selling Heil line and franchise information, *mail the coupon right now!*

THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

HERE ARE **FACTS** TO PROVE HEIL'S STORY

A furnace and conversion burner combination that was new in 1942 was replaced with a new Heil Furnace-Burner unit. The change-over took less than a day. Here are results of tests made before and after the change: CO₂ rose from 7.8% to 11.9%. Stack temperature dropped from 628° to 431°. Overall efficiency soared from 54.2% to 79.8%! And this is but one case in thousands just as remarkable!

THE REPLACEMENT
MARKET IS HUGE

GO AFTER IT NOW!



THE HEIL CO., Dept. A-8
Milwaukee 1, Wisconsin

Please send me your new dealer specification sheets showing full color reproductions of Heil Boiler-Burner and Furnace-Burner models with complete details about a Heil franchise and openings in my territory.

Name.....
Company.....
Address.....
City.....Zone.....State.....

Manufacturers of Quality Automatic Heating Equipment Since 1924

How much longer can your company afford to "refuse business tactfully"?

LET'S FACE IT — the honeymoon is about over. It was fun while it lasted, but it won't pay the rent. Not now.

After an absence of seven years, the spectre of a buyers' market is once more rearing its head, and its expression plainly reads—"I'm going to be hard to get."

This doesn't scare anybody who hasn't forgotten *how to sell*. But there are quite a few of us in American business who could use a quick refresher course. (We've had a long "vacation.")

When it comes to production, our output is up almost 100 per cent. We've acquired a lot of new techniques on the assembly line, because it was obvious that if there were to be any profits left—after increased labor costs, high-priced materials, and taxes—we'd have to trim every last ounce of fat off the manufacturing cost per unit.

But now the time has come when we must apply the same philosophy to the *manufacture of a sale*. That means—*more mechanization!*

Confronted with a buyers' market, how much will it cost *your* company to produce one unit of sale? A prohibitive sum, if you're going to depend entirely on personal contact. You'd have to hire a tremendous force of salesmen to cover the field. Even then, much of their valuable time would be spent on "missionary work"—which is really a job for *mechanized selling*.

Mechanized selling is simply another name for consistent and aggressive advertising. Like the machine on the production line, it is a multiplier of men's efforts, for it enables them to produce (*and earn*) far more than they could alone.

And when it goes to work in the business press, it becomes the most efficient machine at your disposal for *manufacturing sales at a profit!*

Just how efficiently does business paper advertising work? If you'd like to see some examples, we'll be glad to send you a recent ABP folder on actual results. Also, if you'd like reprints of this advertisement (or the entire series) to show to others in your organization, you may have them for the asking.



American Artisan

is one of the 129 members of The Associated Business Papers, whose chief purpose is to maintain the highest standards of editorial helpfulness—for the benefit of reader and advertiser alike.

THE KANSAS CITY STAR.

PRICE: In Kc
Elsew

KANSAS CITY, JUNE 8, 1948—TUESDAY—24 PAGES.

The Final Plan for Village Green Development on Old Electric Park Acreage



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—William R. Hensfield, delineator.

The angle of vision in this de-
lineation of necessity gives promi-
nence to the roofs and wall sur-
faces. With a land coverage of
only 16 per cent the

ing two, four and six units. In
these there will be no public halls,
each consisting of first floor, sec-
ond floor and basement space,
with individual heating plants

extending past the turn in Forty-
sixth street, will be the only 3-
story structures in the new devel-
opment. The half dozen U-shaped
structures will contain 144 units.

The "village" shopping district
is shown at the upper left corner.
The buildings will face the Paseo
as single-story stores. But the
main building will contain a lot

Creek boulevard as it will carry
traffic east from the Paseo along
the north side of Brush creek.
The creek bed is pictured in the
extreme lower left corner. The

A \$100,000,000 - DOLLAR
transformation will turn the
old Electric park acreage into this
"village" of garden apartments.
379 rental units in fifty-two build-

MOR-SUN is FRONT PAGE NEWS

America's Modern Pressed Steel Furnace Stops the Presses Again!

A onetime amusement park in Kansas City is being transformed into
a modern Village Green with 379 rental housing units in 52 buildings
. . . the creation of a new community in the center of the city's
residential area.

Like the "Miracle in Peoria" . . . like America's first planned post-
war city (Park Forest) . . . each of the units in the Village Green
of Kansas City will have its individual Mor-Sun Gas Furnace to supply
forced warm air heat. In the summer, the blowers in these furnaces
will be utilized to create comfort by circulating air through the house.

Mor-Sun is proud to be part of this beautiful garden-type housing
development . . . "a great service to its community in alleviating
the housing shortage".

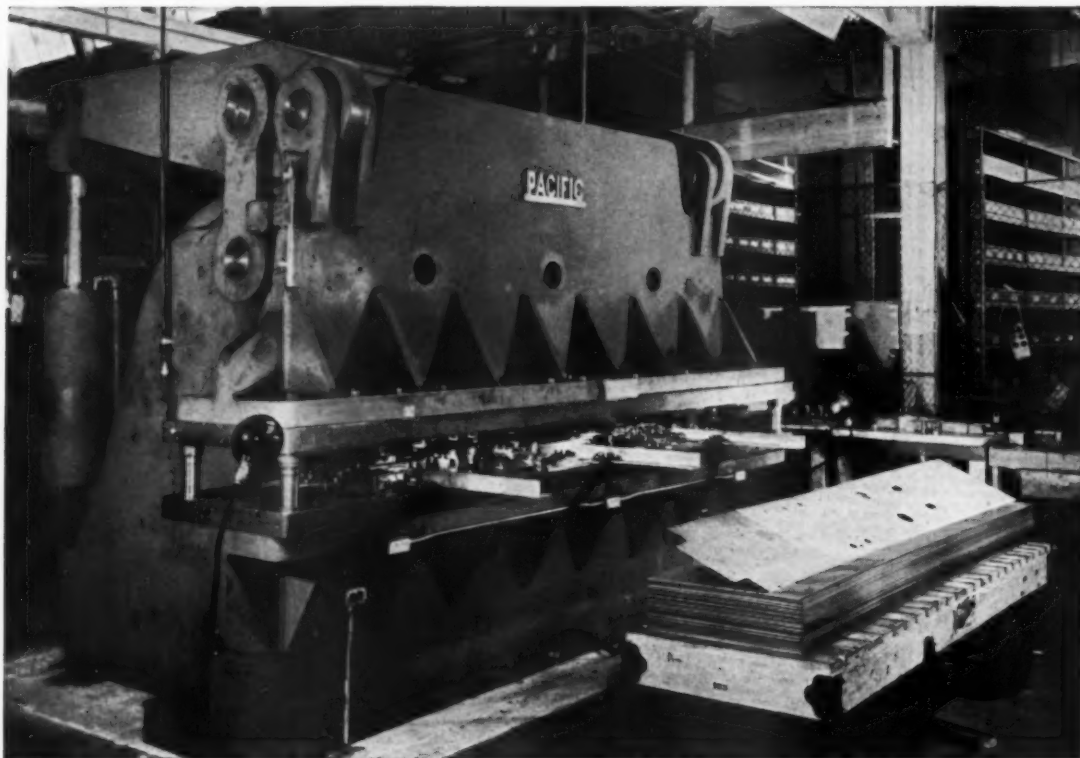
Builders—Herbert V. Jones & Co., Kansas City, Mo.
General Contractors—Winn-Senter Construction Co., Kansas City, Mo.
Architects—Herbert E. Duncan & Elmer Boillot, Kansas City, Mo.
Heating Contractors—Wood Sheet Metal Works, Kansas City, Mo.
Mor-Sun Representative—Wallace Landau, Chicago, Ill.



MORRISON STEEL PRODUCTS, INC., BUFFALO 7, N. Y.

"The Sun Never Sets with Mor-Sun"

HOW TO GET THE MOST OUT OF GIANT DIE SETS



**Model 400
PACIFIC Hydraulic
Press Brake**
equipped with a
28"x144" Whistler die
set, at the Federal
Electric Co.,
Chicago, Illinois

WITH A **PACIFIC** *Hydraulic* **PRESS BRAKE**

★ **QUICKER, EASIER SET-UP**... Stroke length on a Pacific is instantly variable from zero to 6" ... and you can get maximum pressure at any point in the stroke. You can raise, lower or stop the ram in any position at any time. After set-up, upper and lower stroke limits are accurately set by vernier-adjusted stops. In other words, you can fit the press to the dies in minutes, instead of spending hours setting up dies to fit the limitations of the old-fashioned press.

★ **"FIT THE JOB" OPERATION SAVES BOTH TIME AND MONEY**... For punching, blanking or piercing, you can use a short ($\frac{1}{2}$ " or $\frac{3}{4}$ ") stroke at speeds up to 30 per minute if desired. For drawing or forming, you have a long (up to 6") stroke instantly available—with smooth delivery of full

pressure throughout the length of the stroke. You can fit the press to the job ... at savings you can't afford to miss!

★ **ADJUSTABLE PRESSURE PROTECTS DIES**... By a simple adjustment, pressure can be cut down to just that required for punching or forming. A broken punch or "fouled up" die can't jam the press or add damage to dies. It is impossible to jam a PACIFIC press brake ... relief valves automatically by-pass if maximum pressure is exceeded.

★ ★ ★

THERE ARE 26 STANDARD MODELS of PACIFIC Hydraulic Press Brakes, in capacities from 12 ga. x 6' to 1" x 14' ... and with overall die lengths to 22'. Larger units are available on order.

IF METAL FORMING IS YOUR BUSINESS, it will be worth your while to get the facts about PACIFIC brakes. A wire or a letter will bring complete data and prices ...

PACIFIC INDUSTRIAL MANUFACTURING CO.
848 FORTY-NINTH AVENUE • OAKLAND 1, CALIFORNIA

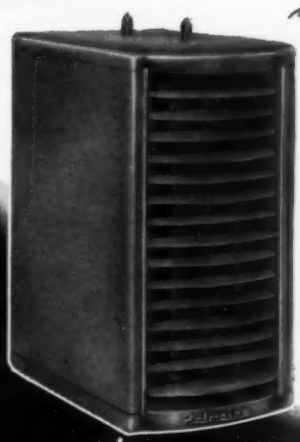
BUILD PRESTIGE...PROFITS!
with the prestige and quality of



Palmaire SUSPENDED HEATERS



EVAPORATIVE COOLERS



**AND "PEP" UP
YOUR
YEAR 'ROUND
SALES PICTURE**



PRODUCT LEADERSHIP

WITH its modern equipment and production techniques, the Palmer plant is looked upon as one of the most efficient plants in the nation. This fact, plus 39 years of manufacturing skill, constant energetic research and development assures Palmaire heater and Sno-Breze cooler leadership at all times.

EXPANDING MARKETS

NEW residential, commercial and government buildings. You completely cover this growing market with Palmaire heater and Sno-Breze cooler models that fully meet the most exacting requirements. Add the replacement buyers and you really have expanding markets plus — a tremendous potential!

PROGRESSIVE BACKING

COMPANY PAID regional and national advertising, seasonal promotions, newspaper mat service, copy ideas, demonstrator units, folders, catalog sheets, point of sale displays. Yes, progressive backing is right, and these progressive energetic sales and advertising policies give that "added touch" to the Palmer picture of "Sales Promotion Perfection"

NOW, HOW ABOUT YOU? There are real volume sales — profits waiting for qualified distributors and dealers. Mail coupon, or write today for literature and sales details.

FREIGHT PREPAID

to destination on car and split carload shipments of Palmaire heaters.

Palmer

MANUFACTURING CORP. Phoenix, Ariz. Dept. A-8

We're interested in:

a dealer _____ distributor _____ sales agreement.

Name _____

Address _____ City _____ Zone _____ State _____



Fireite is easily applied to any clean surface

Joints stay gas-tight when sealed with J-M FIREITE*

● This easily-applied asbestos furnace cement air-sets or heat sets into a practically indestructible joint.

Fireite remains gas-tight against the highest temperatures, resists expansion and contraction strains. This is especially important for domestic oil burner and stoker installations—because better combustion results from gas-tight and air-tight joints.

*Reg. U. S. Pat. Off.

Fireite Asbestos Furnace Cement is ready-mixed, ready-to-use. Easily worked, it can be applied quickly to any clean surface. Fireite is odorless. It keeps well on the bench and, in the container. Fireite has minimum shrinkage, does not bloat, crumble or crack.

Use Fireite for mounting or repairing heating equipment—for setting ash pits and fire pots, doors, dampers and other places

where sealing is necessary. With Fireite, there is less danger of costly call-backs for re-sealing.

WRITE FOR FREE 4 LB. SAMPLE

Let us send you a can of Fireite Furnace Cement and a copy of folder RC-7A. Simply write giving your name and the name of your company. Address Johns-Manville, Box 290, N. Y.



Johns-Manville

FIREITE

asbestos furnace cement

Re

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main
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Weirzin

ELECTROLYTIC ZINC-COATED SHEETS AND STRIP

Reduces Die Cost BY LENGTHENING DIE LIFE

Weirzin has a tight electrolytic zinc coating that lubricates dies without danger of leaving a zinc deposit. Die maintenance expense is thereby sharply reduced, and the life of the die increased.

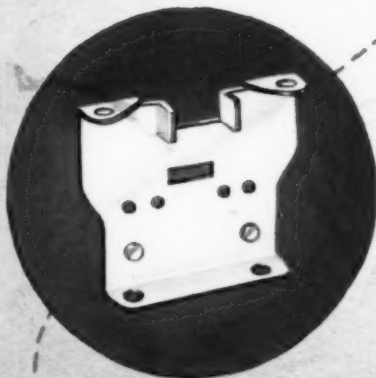
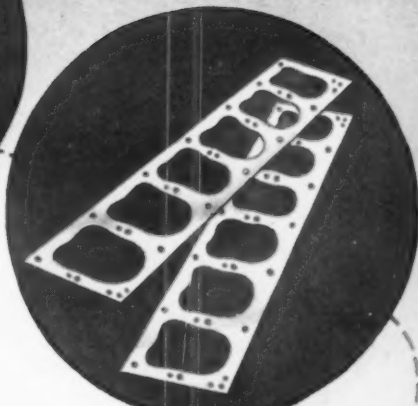
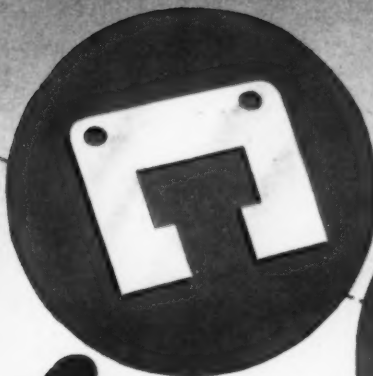
A specific example of this, reported by a fabricator, relates that instead of the usual production run of 100,000 pieces from dies when using ordinary carbon steel, change to Weirzin increased production to over 400,000 pieces. This 300% average increase in production per set of dies is too great a factor in present-day costs to be ignored. You might find such an opportunity in your own plant.

The most severe fabricating operations will not cause Weirzin to peel, flake or powder. Its electrolytic zinc coating remains intact under deep drawing or difficult forming and bending operations without deterioration. For more specific information, write

WEIRTON STEEL CO.

WEIRTON, W. VA. • Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION • Executive Office, Pittsburgh, Pa.



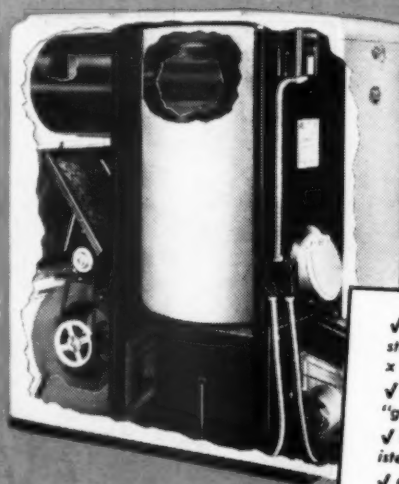
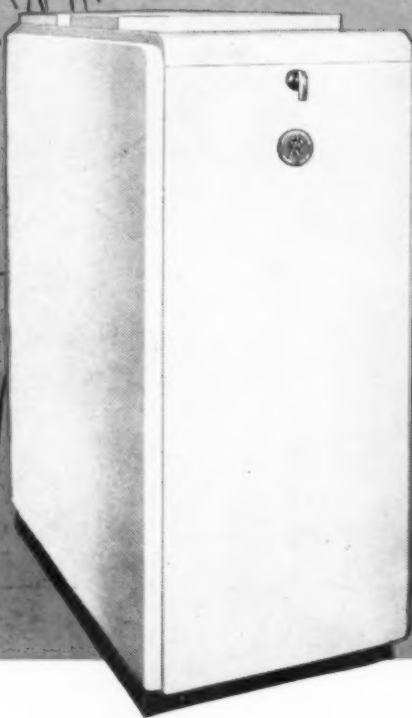
NEW RICHMOND UNIT

takes an "E" for EASY!



GUN-TYPE OIL-FIRED

WINTER AIR CONDITIONER!



- ✓ Whiter-white Richmond enameled steel jacket 54½" LOW!—23" wide x 47" deep
- ✓ Steel base and channels—no "grouting" needed
- ✓ Capacity—90,000 Btu at registers; 140,000 Btu input
- ✓ Oil input 1 gallon per hour
- ✓ Burns No. 3 oil—straight run or catalytic

Now! A Unit Designed with the TRADE in Mind!

Another Richmond "Plus". In the new Richmond Oil-Fired Winter Air Conditioner you get a real installation time-saver. First locate your furnace. Then you simply hook up the burner to the panel and all elements are right where you want them. No time and trouble on unnecessary adjustments—that means \$25 to \$35 saved.

Final Assembly is quick, too. This Richmond unit comes in

three packages—the heaviest weighs only 395 lbs. (appr.). All you do is place combustion and burner assembly in the furnace unit, spin four wing nuts and make electrical connections at junction box. That's all! Now you're ready for supply lines and flue connections. Unit Installed!

Richmond started all this in 1867

... and



"We've come a long way since then!"



RICHMOND RADIATOR COMPANY
AFFILIATE OF REYNOLDS METALS CO.



Plumbing Fixtures:
Heating Equipment:



Enameled Cast Iron Ware



Vitreous China



Pyrex Glass

Oil and Gas Winter Air Conditioners Gas Boilers Radiators

CLIP AND MAIL COUPON TODAY

Richmond Radiator Company
19 East 47th Street, New York 17, N. Y.

AA-8

Gentlemen:

I am interested in the New Richmond Gun-Type Oil-Fired Winter Air Conditioner. Please send me full details. No obligation, of course.

Name.....

Company.....

Address.....

MEMO TO PRESIDENTS WHO WATCHED THE BAND GO BY!

HERE'S ONE parade that isn't "all over but the shouting" after the band has passed. It's the Payroll Savings Plan for the regular purchase of U.S. Security Bonds by employees.

Though the formal spring campaign to sell Bonds is over, any company can still move forward with the parade. Right now thousands of companies are putting *additional push* behind their Payroll Savings Plans. Managements of many companies that have not yet participated are *now installing* the Plan.

It's a "look-ahead" plan, that benefits employee, company, and nation. Every \$3 invested in Bonds pay \$4 at maturity. Personnel records in the plants with active P.S.P. programs show improved employee attitudes—evidenced by less absenteeism and fewer accidents—as the individual's sense of security grows with Bond purchases. And every Security Bond dollar built up in the Treasury retires a dollar of the national debt that is potentially inflationary. It means less bidding-up of prices. Moreover, Bond buyers are better citizens because they have a tangible stake in the nation's future.

It's just as easy to take action now as when the campaign was at its height. Just call your Treasury Department's State Director, Savings Bonds Division, and ask for the material that helps to get a Payroll Plan started or to keep it rolling.



The Treasury Department acknowledges with appreciation the publication of this message by

AMERICAN ARTISAN

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and the Advertising Council.



NEW LITERATURE

Use Coupon on Page 117

Furnace Sales Literature.....300

A new four-page series of literature in color describes the Victor line of heating equipment. Each is graphically illustrated with details of construction and include engineering data and dimensions.

Boiler plate steel gravity furnaces and winter air conditioning units, finned radiation furnaces, oil designed equipment, and stokers are included in the series.

Hall-Neal Furnace Company, 1322-32 Capitol Ave., Indianapolis 7, Ind.

Vaporizing Burner Controls.....301

A four-page folder tells how Unapac, a control package for vaporizing oil furnaces, reduces control cost and improves furnace appearance.

Unapac combines a constant level oil control with special constant low pilot flow, if desired, plus limit control, winter circulating fan control, summer circulating fan control, combustion air blower control, and a transformer in one streamlined case, 6½ in. wide, 9¼ in. high, and 4½ in. deep.

Automatic Products Company, 2450 N. 32nd St., Milwaukee 10, Wis.

Stainless in Chemical Processes.....302

A fifth in the series of booklets on stainless steel in various industries—Allegheny Metal in Chemical Processing—is available in color.

Up to the minute facts and figures have been compiled on the use of stainless in the chemical processing, acid manufacture, general processing, plastics, pharmaceutical manufacture, dye industry and soap making. Each chapter is fully illustrated. Charts showing physical, fabrication and other data on the various recommended grades of stainless steel are included in the booklet, along with other information valuable to the engineer.

Designed for both technical people and laymen, the booklet describes the close parallel in the modern growth of stainless and chemical industries, showing how each added to the others' advancement.

Allegheny Ludlum Steel Corporation, 2020 Oliver Building, Pittsburgh 22, Pa.

Air Dryer Datagram.....303

Determining Moisture or Latent Loads is the subject of Datagram SGD No. 2, giving data on the determination of moisture or latent loads. The purpose is to cover the various sources of moisture load. From this data, the total latent load on an air conditioning or drying system can be determined. The total latent load will consist of the sum of the applicable individual loads.

Bryant Heater Company, Industrial Division, 1020 London Road, Cleveland 10, Ohio.

The General

Make profits on every installation.
Eliminate troublesome call backs.
Build regular repeat business through cartridge replacements.
Help customers save money by giving cleaner burning fuel.
Build goodwill and customer loyalty by providing trouble-free operation.



CAN INCREASE YOUR
SERVICE DOLLAR VOLUME
WITH INSTALLATIONS

General HAS THE RIGHT FILTER FOR EVERY OIL HEATING PLANT!

The General is popular with all contractors, dealers and fuel oil service companies because it has proven the best fuel oil filter for heating plants, hot water heaters, and room heaters. The General will prove a profitable leader for you, too! Report after report in our files bear out these statements.

For average installations three models, Deluxe 2A-300, Master 2A-700 and Economy 1A-25, are outstanding leaders in the General line because they are priced to sell easily, built to give long-lasting service, and designed to provide high-degree performance.

There is no better time than now in letting General Fuel Oil Filters increase your service dollar volume. Contact your jobber immediately or write direct for information and discounts.

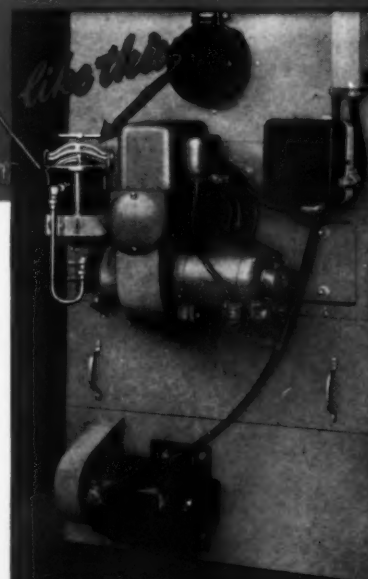
Listed: Re-examination Service, Underwriters Laboratories

GENERAL FILTERS
INCORPORATED

GENERAL FUEL OIL FILTER

12890 WESTWOOD AVE.
DETROIT 23, MICHIGAN

SEE YOUR JOBBER OR WRITE DIRECT TO THE FACTORY





new comfort throughout ENTIRE HOMES



Pre-determined
temperature,
room by room.



Complete in-
stallation bal-
ances forced
warm air for
greater effi-
ciency and fuel
savings.



Register-damper
re-acts automat-
ically to room
temperature air.

with **DOLE** *Thermostatic Air* **CONTROLS**

for Forced Warm Air Heating Systems

- Operates thermostatically from room air.
- Very sensitive—Modulating effect—Output is regulated to meet heat losses.
- Completely self-contained; no wires to run—no bulbs to locate—very simple to install.
- "Tune-in" the desired room temperature as simply as you tune in a radio program. Corrects many unsatisfactory heating installations—Materially improves any forced warm air system.
- A zone control for every room.

You can always sell people more comfort. You can deliver it now with installations of Dole Thermostatic Air Controls.

Every contractor-dealer knows of numerous forced warm air systems where air distribution needs better balancing to assure real comfort.

Now heat losses, room by room, can be compensated automatically!—at a tremendous gain in comfort. As a clincher there's a substantial fuel economy, too. Here's a profit you can collect all winter long. Ask your wholesaler. Write us.

Control with **DOLE** • Also Air & Vacuum Valves for Steam Systems, Hot Water Air Valves, Water Mixers, etc.

THE DOLE VALVE COMPANY • 1933A CARROLL AVENUE • CHICAGO 12, ILLINOIS
REPRESENTATIVES IN PRINCIPAL CITIES

FOR

*Quality Products
Prompt Service
Profitable Cooperation*

Buy from a Herman
Nelson Distributor like
E. Keeler Company of
Williamsport, Pa.



R. D. McLain, Vice President
E. Keeler Company
Williamsport, Pa.

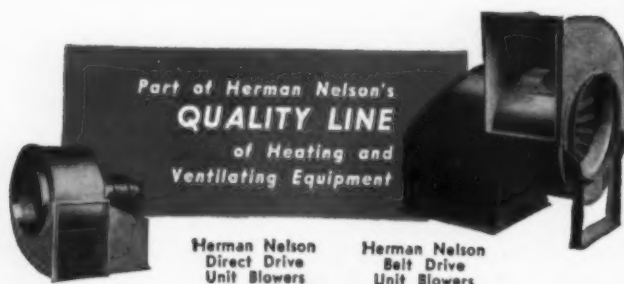
The Herman Nelson Corporation and its carefully selected Distributors like E. Keeler Company have a nationwide reputation for prompt delivery of quality products. What's just as important — they're ready and anxious to help you with profitable merchandising cooperation.

Sales promotion campaigns and literature provided by Herman Nelson are boosting sales for dealers and contractors throughout the country.

Herman Nelson Distributors meet your requirements promptly from stock for both equipment and installation materials.

Immediate service from Herman Nelson is available from members of the sales and engineering departments of its distributor organizations.

Increase your business by selling Herman Nelson quality products and benefit from prompt service and friendly cooperation. Contact the nearest Herman Nelson distributor for quality heating and ventilating equipment and the kind of cooperation and service that mean extra profits for your business.



THE HERMAN NELSON CORPORATION

Since 1906 Manufacturers of Quality Heating and Ventilating Products
MOLINE, ILLINOIS

NEW LITERATURE

Use Coupon on Page 117

Portable Brakes304

Literature is available describing Webco portable sheet metal brakes, featuring detachable open end bars and adjustable finger assemblies. New brakes with improved hinges and redesigned folding arms bend sheets up to 18 gauge, depending on model and folding arm used. Detachable stands permit entire unit to be carried in back of car or pick-up truck.

Webb Machine & Tool Co., Coraopolis, Penn.

Firepots and Torches305

Catalog G covers the complete C&L line of blow torches and fire pots available, as well as repair parts.

Tanks of the torches are drawn from heavy gauge cartridge brass. Fittings are inserted under heavy mechanical pressure. Solder is used only as a seal for 'gas tightness.' Burners are cast from bronze to resist extreme heat and hard surface. Valve handles are made of Bakelite. Fire pot tanks are drawn from heavy gauge seamless steel—leakproof and rust resisting.

Most torches and firepots can be adapted to burn either gasoline or kerosene.

Clayton & Lambert Mfg. Co., 1707 Dixie Highway, Louisville 10, Ky.

Welding Guns306

Technical bulletin No. 402, 12 pages, shows how the standardized welding guns are built up by combining standardized and interchangeable components. By varying standardized jaw extensions and electrodes on one gun chassis, as many as 57,600 gun shapes can be produced.

In addition, interchangeable parts can be used to change a gun shape when the particular operation is no longer required.

Included in the bulletin are descriptions of the many new features incorporated in the standardized welding guns to reduce maintenance time and cost, and to make them more versatile in performance. Description of complete gun installations as well as components such as transformers, boosters, air valves, hangers, balls, automatic cable clamps, self-sealing hydraulic couplings, hand retraction mechanisms, etc., are provided.

Progressive Welder Company, 3050 E. Outer Drive, Detroit 12, Mich.

Drafting Template307

Time-Saver templates for engineers, designers, draftsmen and architects are described in a 4-page catalog. Each type of template is pictured, designated by number, and briefly described.

Rapidesign, Inc., P. O. Box 592, Glendale, Calif.

**FOR QUICK PROFITS
PUT YOUR MONEY
ON THIS LINE**

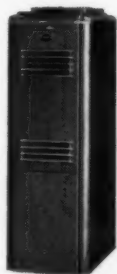
**This New *UTILITY*
Built-In Wall Heater
is a "Natural"**

This new built-in circulating heater is winning contracts everywhere—as the sole heating equipment for small units, and as extra heat in larger buildings. Pre-assembled at factory, with plaster guides and header for easy installation in any standard 4" stud wall, without furring. Richly styled with lots of sales-building features. Single or dual models, vented, 15,000 to 50,000 BTU input, with automatic or manual controls.

UTILITY

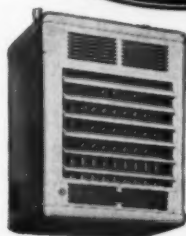
UTILITY APPLIANCE CORP.

4851 S. Alameda St., Los Angeles 11, California
DIVISIONS: Gaffers & Sattler • Occidental Stove Co.



FORCED AIR FURNACES

Provide year-round comfort—clean filtered warm air heat for winter and clean filtered fresh air coolness for summer. Compact for small space installation. Specially designed, *Utility*-built blowers. 75,000 to 150,000 BTU models.



**UNIT HEATERS
—SUSPENDED TYPE**

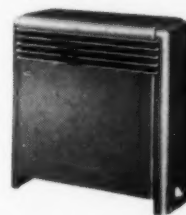
For commercial and industrial heating. Burner, heat exchanger, draft diverter, motor, fan, and all other parts self-contained in enameled steel cabinet. Adjustable grilles direct heat as desired. 90,000 and 150,000 BTU models.

All *Utility* heating appliances are approved by American Gas Association



FLOOR FURNACES

Low cost heating for homes of moderate size. Simple installation in old or new homes. Fit under any floor. *Utility*-built burner gives quiet, even flame. Flat and dual register models. 37,000 and 50,000 BTU capacities. Vented.



CIRCULATING HEATERS

Clean, healthful, safe heating at lowest cost. Graceful design, baked enamel finish, chrome trim. Front discharge gives maximum warm air circulation. Compact design for convenient location. Vented. 25,000 and 35,000 BTU models.



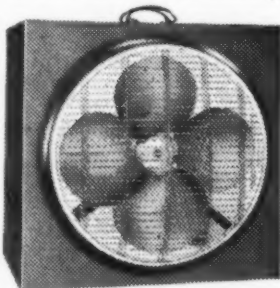
**SULTRY
SUMMER
HEAT**



BRINGS COOL PROFITS

WITH REX WINDOW FANS

THERE'S nothing like hot, oppressive 90° summer weather to sell people on window fans. And there's nothing like the smart design, skilled workmanship, and popular prices of the REX W-16 Portable Window Fan to make those people your customers! The resilient hub-mounted 1/25 H.P. Redmond motor means long and efficient service . . . four over-lapping aluminum blades mean the best in service. The 3-speed switch to control the air velocity and front and rear safety grilles are just a few more features that mean better sales. Write for complete catalog information and prices *NOW* and cash in on this growing demand for cool summer comfort.



Twelve models available, ranging from 14" to 50" Exhaust. Write for catalogs.



2310 Superior Ave.

Cleveland 14, Ohio

NEW LITERATURE

Use Coupon on Page 117

Building Necessities 308

Majestic Building Necessities is the title of an illustrated catalog giving complete specifications on a number of commonly used building products.

Cleanout and ashpit doors, outdoor fireplaces, flue thimbles, incinerators, and coal chutes are examples of the range of items described.

Complete specifications for each are included.

The Majestic Co., Huntington, Indiana.

Pocket Electrode Guide 309

A pocket guide to Airco arc welding electrodes presents all the facts pertaining to the commonly used Airco electrodes along with helpful data regarding the factors to be considered when choosing an electrode for a specific job.

The illustrated, 4 x 8 guide is thumb-indexed for ready reference. Section titles include mild steel, high tensile steels, low hydrogen weld metal, stainless steels, surfacing, non-ferrous and cast iron. The information on each electrode mentioned in the new guide includes description, recommended application and welding procedure.

Also included is an easy-to-read electrode selection table which gives the operator information on which electrode to use for a particular job, its chemical analysis and mechanical properties.

The guide also features a two-page NEMA standard color marking chart and an electrode comparison chart which matches up the various electrodes on the market with their respective A.W.S.-A.S.T.M. classification.

Department A19-24P, Air Reduction Sales Company, 60 East 42nd Street, New York 17, N. Y.

Magnetic Starters 310

Magnetic starters and contactors are described in Bulletin 2705. Complete details, dimension drawings, electrical ratings and selection guide for overload relay heaters are given in Bulletin 2705.

Penn Electric Switch Co., Goshen, Ind.

Portable Scaffold 311

A six-page folder illustrates and describes Up-Right aluminum alloy scaffolds, each section of which folds into a flat package, 6½ feet thick, and weighing 52-64 pounds.

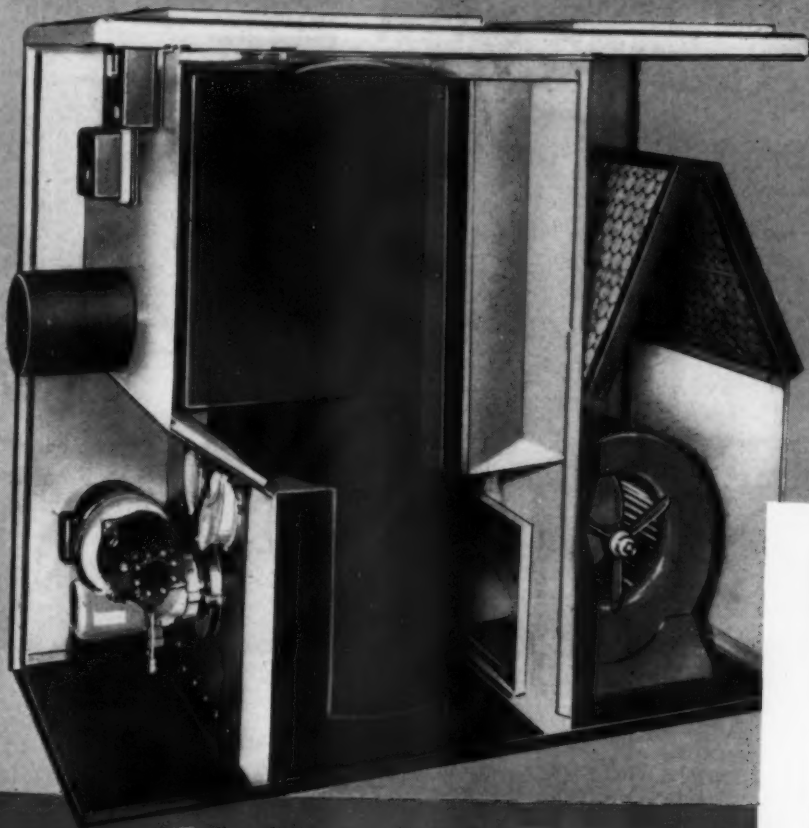
A double section unit is 13 feet high, and is adjustable up to 15 feet. A triple section is 18 ft. 10 in. high, and adjustable to 20 ft. 10 in. Each section locks in position. A safety-tread stairway permits mounting entirely within the structure.

Erection procedures are given.

Up-Right Scaffolds, 1015 Pardee St., Berkeley, Calif.

VICTOROIL

FURNACES



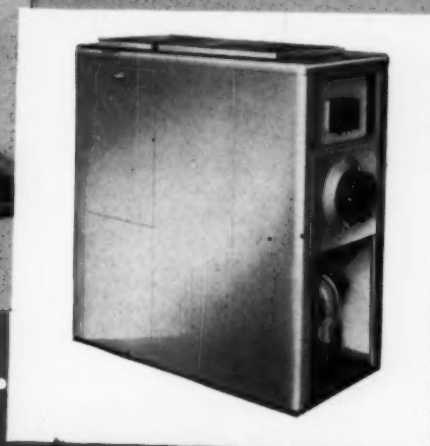
WITH HIGH
RADIATING



The
Series R

R-110 (left)

R-75 (below)



Designed for **OIL...**
Built for **OIL...**

write us...

for complete new literature on the
VICTOR Line. It's COMPLETE for
Coal, Gas and Oil. VICTOR...
"Quality since 1890" makes sales
easier for you.

The series "R" VICTOROIL furnaces consist of 2 beautiful oil
burning, Winter Air Conditioners of outstanding quality and sal-
ability. Their streamlined beauty, compact efficiency, sturdy
boiler-plate construction, with highly efficient heat exchanger
and exceptionally long fire travel... PLUS VICTOR FUEL SAV-
ING HEAT BOOSTING FINS... assure fast sales, absolute
owner satisfaction and permanent, service-free dealer profit.

There is no substitute for Quality—plus experience

COAL • GAS • OIL FURNACES • OIL BURNERS • STOKERS • BLOWERS • ACCESSORIES

HALL-NEAL FURNACE Co.

VICTOR Quality Furnaces Since 1890

1322 N. CAPITOL AVENUE • INDIANAPOLIS 7 • INDIANA

**A MATCH CAN
HELP YOU MAKE
REPLACEMENT SALES!**



**TO DEALERS WEST OF
THE APPALACHIANS**

Talk it over with GILBARCO.
Be sure you get the advantages of selling the modern oil burner, the new oil-saving GILBARCO, the burner that is in great demand as the ideal replacement burner. Franchises are now being awarded.
Wire or write today!

HERE'S THE TEST: Strike a match and then extinguish it. See the cloud of smoke as it flames up and again right after you put it out. This is the best way to demonstrate the before-and-after smoke puff that cuts down heat volume by depositing soot on the heating surfaces when ordinary, conventional oil burners start and stop.

Use this simple demonstration to show customers how ordinary burner starting and stopping causes smoke and soot, cuts down heat volume.

Show homeowners how the **ECONOMY CLUTCH** on the GILBARCO OIL BURNER provides smokeless starting and stopping and *actually gives more heat per gallon!* This single patented feature is the most important oil burner advance in 25 years, and is certain to impress any customer looking for a way to cut fuel consumption.

Gilbarco

**THE OIL BURNER
WITH THE
ECONOMY CLUTCH**

GILBERT & BARRETT MFG. COMPANY
WEST SPRINGFIELD, MASS., AND TORONTO, CANADA

NEW LITERATURE

Use Coupon on Page 117

Combustion Analyzers.....312

Bulletin No. 220, colorfully printed in red and black, shows in detail the various components of combustion test sets and tells how they are used.

Basic sets include flue gas analyzers, draft gauges, and stack thermometers, which with the accessories permit every necessary test to be made.

A new smoke gauge is presented. This instrument provides an actual sample of the smoke being tested in determining the maximum permissible amount of smoke for clean combustion.

F. W. Dwyer Manufacturing Co., 317 South Western Ave., Chicago 12, Ill.

Welding Guide.....313

Vest Pocket "Guide to Better Welding," gives the characteristics of various welding arcs, four essentials of proper welding procedures, type of joints, typical positions, chart of standard sheet shapes, photographs of good and bad welds, causes of common welding troubles and what to do about them, welding symbols, and an easy-to-use table of "How to Find" formulas.

Hobart Brothers Company, Hobart Square, Troy, Ohio.

Sheet Metal Fabricator.....314

Catalog 10-A covers in 12 pages (8½ x 11) the Wales sheet metal fabricator with hydra-new-matic drive. This machine punches, notches, nibbles, bends, blanks and forms. Features are given, the "quick change" system is described, interchangeable standard units are shown, accessories are pictured and described, equipment is listed and specifications are given.

Wales-Strippit Corporation 345 Payne Ave., North Tonawanda, N. Y.

Builder's Sales Aid.....315

A four-color portfolio is equipped with pockets into which a builder can insert all obtainable supplier literature describing the materials and equipment in his new model homes.

On the basis of findings, his promotion plan has been prepared for the small home builder, aimed to provide what the prospective home buyer most wants to know about the house he is planning to buy.

The portfolio is a sales tool for dealers to use with builders and explains in detail what home buyers want to know. It includes the answers or means to provide the answers to buyers' questions.

Dealer's name and address may be imprinted on the back cover. Placed in a model home or sales office, this portfolio enables the builder to present to prospects a complete sales story of the house in one package.

Rheem Manufacturing Company, 11 West 42nd St., New York 18, N. Y.



Self-Contained Inner Unit



Air Volume Adjustment

**FAST
INSTALLATION**

"Custom-made"
air pattern with
Kno-Draft Adjustable
Diffusers in
Champion Spark Plug Plant



PROBLEM: A ceramic kiln radiates heat on one side and a cold window-filled wall creates drafts on the other. The space is long and narrow with low head room. The occupants work in short sleeves. Unusually large volumes of supply air have to be brought in to combat the heat of the kiln. Space for duct work above the room is limited so that diffusers have to be spaced much closer than usual. The supply air stream has to be directed slightly above the horizontal and evenly distributed so that no drafts are felt by the personnel.

SOLUTION: Kno-Draft Adjustable Air Diffusers were chosen because of their ability to control air direction, volume and throw. A "custom-made" air pattern was created which thoroughly mixed room and supply air, maintained uniform temperature throughout and eliminated drafts, hot spots, and cold spots. Installation was fast. Kno-Draft self-contained inner units cut installation time up to 50%. Balancing was fast. CFM readings were taken directly with Velometer. A twist of the wrist changes air volume on each diffuser.

Free — New handbook on Air Diffusion

It contains the latest engineering data on air diffusion and is profusely illustrated with charts, photographs, sketches and dimension prints that simplify the selection, application, location, assembly, erection, testing and adjusting of Kno-Draft Adjustable Air Diffusers. It is designed to help you get top efficiency from an air conditioning system by creating "custom-made" air distribution patterns.

For your FREE copy, please write Dept. J-12



W. B. CONNOR ENGINEERING CORP.

Air Diffusion • Air Purification • Air Recovery

112 East 32nd Street  New York 16, N. Y.

IN CANADA: Douglas Engineering Co., Ltd., 190 Murray Street, Montreal 3, P. Q.

JOHN ZINK "SHORTY" FLOOR FURNACE



— ONLY 26" DEEP —

Two Sizes Available

30,000 Btu — 50,000 Btu

AGA Approved for Natural,
Manufactured and Liquefied
Petroleum Gases

These new floor furnaces are especially designed for installation where under-floor space is limited. Being only 26" deep, they can be installed where foundations are extremely low, eliminating the necessity of making a pit.

Write for Literature

John Zink Company

4401 South Peoria

TULSA, OKLAHOMA

New York - Salt Lake City - Houston - Los Angeles

NEW LITERATURE

Use Coupon on Page 117

Insulation Booklet316

Accordion pleated insulation in a carton (to be expanded for installation) is described in a 16-page folder. The carton is $3\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{2}$ ft. in size, weighs 60 pounds and contains 1,000 sq ft of accordion insulation.

Various types are available, using aluminum foil and kraft paper. Installation instructions and thermal insulation values are included.

Infra Insulation, Inc., 10 Murray St., New York, N. Y.

Grinder Bulletin317

The No. 266 bench grinder, described in a 2-page folder is powered by a $\frac{1}{4}$ -hp ball bearing, constant speed induction motor. Features include bearings enclosed against dirt and grit, safety-type wide wheel guards, adjustable tool rests, toggle type switch enclosed in a moulded case located in the base of the grinder.

Guards are adjustable to permit grinding at any point on the circumference of the wheel. Speed at 60 cycles is 3450 rpm. Two wheels, 6 x 2 in., coarse and fine, are furnished.

Stanley Electric Tools, New Britain, Conn.

Roofing Guide318

A new illustrated, 24-page booklet has been published to help architects and contractors educate their customers on the importance of a good roof. The booklet discusses the destructive effect on roofs of smoke, fumes, and other corrosive agents common to industrial centers.

Full data on a new, soft-temper Monel roofing sheet, designed to overcome severe roofing conditions, is presented in non-technical language. This information is part of a general discussion of the qualities required for a lasting roof with minimum maintenance.

Some of the nation's notable buildings having Monel roofs are pictured in this new booklet. They include buildings of various sizes and types. The present condition of the Monel roofs, in some cases after 35 to 40 years of service in some of the most severe conditions in the country, is described.

In the last section of the booklet, a fully-illustrated description is given on Monel's adaptability to current architectural and roofing designs and practices.

The International Nickel Company, Inc., 67 Wall Street, New York 5, N. Y.

INDUSTRY ITEMS

EARLY THIS YEAR, foremen, department managers and other supervisory personnel of the Hess Company, Chicago manufacturer of warm air furnaces and grain driers, formed the Hess Management Club, joined and affiliated with the National Association of Foremen.



In honor of this affiliation, a dinner party and installation of officers was held at the Marshall Square Ball Room in Chicago.

Installation ceremonies were conducted by Mr. Al Schwan of the National Association of Foremen, who also presented the Hess Management Club with the Charter of Organization. Officers of the Club (as shown) are Edward Ossman, President; George Hedtke, Vice President; John MacBeth, Treasurer; Mrs. Carol Henderson, Secretary, and William H. Sheets, Sergeant at Arms.

MINNEAPOLIS-HONEYWELL REGULATOR COMPANY has announced a series of regional, branch and divisional managerial changes. Kent L. Wilson has been made manager of the southwest region with headquarters in Dallas. Formerly manager of the Detroit branch of the company, he now has the region which covers all of Texas and surrounding areas, and includes branch offices in Dallas, Houston, New Orleans and Wichita. Mr. Wilson succeeds Carl W. Schick.

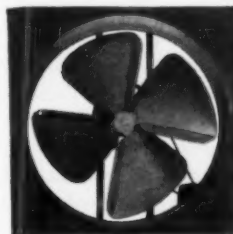
T. S. Carley succeeds Mr. Wilson in Detroit as branch manager, and he was formerly sales manager of the Stoker and Wholesale Division in Minneapolis. Walter J. Baak, who has been Moduflow sales manager of the Midwestern Region has been made sales manager of the Wholesale Division. G. M. Kingsland has been heading sales activities of the company's Control Devices and Specialties Department and has now taken over new duties in the Heating Controls Division. He will head sales activities of the Stoker Controls Division. William F. Robards has been appointed Milwaukee branch manager, succeeding L. C. Johnson who died after a short illness in May of this year. Mr. Robards has been in the Milwaukee Office since 1944 in charge of Industrial Division Sales.

Sell them SUMMER COMFORT

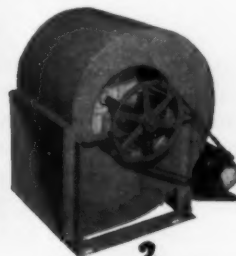
The **FRESH-AIR-MAKER** Line

OFFERS MOST ATTRACTIVE TYPES AND
VALUES TO GET THE BUSINESS

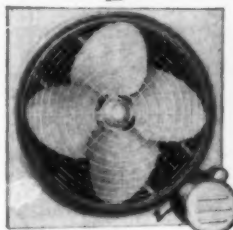
You will need the best there is in quality, performance and design for 1948, and all at a reasonable price. Schwitzer-Cummins Fresh-Air Maker fans and Hy-Duty Blowers can't be beat for big air delivery, quiet operation, selling features and looks.



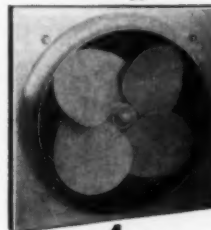
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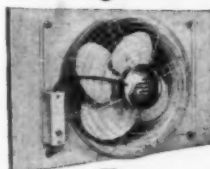
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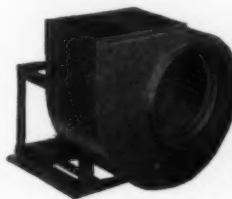
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6



7

- 1 Attic Ventilators
- 2 Centrifugal Blowers
- 3 Window Fans
- 4 Exhaust Fans
- 5 Adjustable Window Fans
- 6 Portable Fans
- 7 Single Inlet Blower

IMMEDIATE SHIPMENT

Investigate... Widen your line... Boost your profits... New literature

SCHWITZER-CUMMINS COMPANY

Ventilating Division

1145 EAST 22 STREET • INDIANAPOLIS 7, INDIANA

Builders of Fine Fans for 30 Years

INDUSTRY ITEMS

HARRINGTON AND KING PERFORATING COMPANY of Chicago recently announced the retirement of J. M. Fuller as president after 62 years of service with the company. Foye P. Hutchinson was elected president, Judson E. Fuller, vice president and treasurer, and S. Harrington, Jr., secretary. Through the years this company has been engaged in the industrial and ornamental perforating of metals and other materials.

ROBERT F. KRISINGER of Des Moines, Iowa, has been appointed Master Kraft factory field representative for Harvey Whipple, Inc., makers of Master Kraft Oil Burners and oil-burning units covering the states of Iowa and Missouri. For the past 9 years, Mr. Krisinger has covered Iowa for the Green Colonial Furnace Company and is well known to dealers in that state.

TO KEEP PACE with the peak production requirements demanded by sales, Air Filter Corporation has tripled its manufacturing space, taking over new quarters at 108 North Water Street, Milwaukee, Wisconsin. The company expects to substantially increase its present facilities. Air Filter Corporation manufactures Aircor air filters, grease filters and welder filters for heating, ventilating, and industrial use.



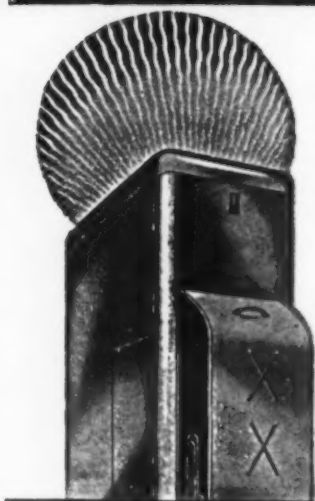
J. F. O'Donnell

ager, he was Assistant General Manager of the Company.

FIELD CONTROL DIVISION of H. D. Conkey and Company, Mendota, Illinois, recently announced the appointment of two new representatives for Field Barometric Draft Control. The Mercury Sales Company at 228 Empire Building, Syracuse, New York, principals being R. J. Millholland and W. F. Hirsch, will cover the State of New York outside of Greater New York City. The Norris Blanchard Company, WOW Building, Omaha, Nebraska, will cover the states of Iowa and Nebraska.

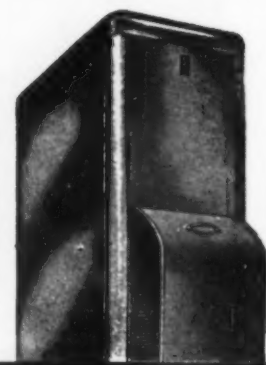
In another recent announcement Field told of taking over the national sales and distribution of the Bearlee Emergency Draft Damper Control. This product, formerly the property of the Bearlee Products Co., Green Bay, Wis., will be marketed under the Field name in the United States and Canada.

WHEN YOU THINK OF HEATING EQUIPMENT—



OIL

Quiet, Economical, Space Saving, Zeph-Air Oil Burning Furnaces, Easy To Operate, Easily Installed.



GAS

Completely Automatic Air Conditioned Gas Furnaces With The Famous Gear Shaped Cast Iron Radiation Surfaces.



COAL

You Buy Quality In Zeph-Air Coal Furnaces. No Costly Service Calls To Worry About.

Remember
XX CENTURY

ZEPH-AIR

With It's 54 Years of Engineered Efficiency in The Heating Field

It Pays To Push Zeph-Air Heating Products—Thousands of Satisfied Users All Over The Country Remember The Dependability And Reliability Their Zeph-Air Furnaces Stand For.

When a Zeph-Air Furnace Has Ended Its Long-Life and Is Ready To Be Replaced—The Customer is Almost Sure To Say—"Years of Uninterrupted Service," "Install Another Zeph-Air."

Cash In On This 54 Years of Customer Satisfaction—Stock Up On Zeph-Air Heating and Weather Conditioning Equipment—Now.

THE XXTH CENTURY HEATING & VENTILATING CO.

96 IRA AVENUE

AKRON, OHIO



**CAN IT BE THAT
YOU HAVEN'T
tried THARCO?**



No other furnace cement is like THARCO . . . none can be, since THARCO is the product of a secret Armstrong formula.

So uniformly excellent is this cement that leading furnace manufacturers have used it year after year . . . and our steady customers among contractors run into many hundreds.

Look Here!

1. SMOOTH AS SILK—can be applied FASTER—no lumps, no wastage.
2. NO SHRINKING, cracking or checking—positive guarantee of gas-tight furnaces.
3. STAYS PUT—greater adhesion to metal parts due to secret Armstrong formula.
4. LASTS LONGER—permanent bond not affected by time or high temperatures.



KOPPERS Plastipitch* Protected Metal Advertising *is helping to build your business*

TO PUT IT UP economically
A building of Koppers Plastipitch is built with less material, and costs less than other building materials.

TO PUT IT UP fast
A building of structural steel with Plastipitch Protected Metal can be erected more rapidly than one of masonry or brick.

TO PUT IT UP permanently
With the Koppers Plastipitch method of protecting steel sheets, they are safeguarded from weather, salt, rust, corrosion, industrial atmospheres, etc.

TO KEEP IT flexible FOR PROCESS CHANGES
A building erected with Plastipitch can be altered, enlarged, or other items added in a new location, if process change.

Plastipitch Protected Metal is backed by six years of industrial applications, and by the thirty years of Koppers experience in the manufacture of cold tar pitch for roofing industrial buildings. Send for this manual which tells recommended uses, methods of erection, and the help you can get from Koppers on detailing special shapes, gutters, downspouts, flashings and other accessories for a Plastipitch building.

*Reg. Trade Mark, U.S. Pat. Off.

KOPPERS COMPANY, INC.
Pittsburgh 19, Pa.

Koppers is building a fast-increasing market for its new product, Plastipitch Protected Metal roofing and siding . . . through national advertising in factory, chemical, engineering, railway and other trade papers and magazines.

This means added business for you. For Koppers does not do erection work. Its Plastipitch jobs are handled through sheeting contractors.

Koppers maintains through its approved distributors, warehouse stocks of Plastipitch Protected Metal in each major trading area. This makes it easy for you to obtain sheeting locally and quickly. Send for the engineering manual on Plastipitch Protected Metal.

KOPPERS COMPANY, INC.
Department 812T
Pittsburgh 19, Pa.



*Reg. Trademark, U.S. Pat. Off.

DISTRICT OFFICES: PITTSBURGH: Koppers Building, Telephone: Atlantic 6240—NEW YORK: Empire State Building, Telephone: Longacre 4-1130—PROVIDENCE: 178 Massasoit Ave., E. Providence 14, R.I., Telephone: E. Providence 0312—BOSTON: 250 Stuart Street, Telephone: Liberty 6525—NEW HAVEN: 251 East Street, Telephone: New Haven 7-2811—BIRMINGHAM: Woodward, Ala., Telephone: Birmingham 8-1611—ST. LOUIS: 4000 Bingham Ave., Telephone: HUDSON 2710-11—CHICAGO: Peoples Gas Building, Telephone: Webster 2400.

THE MARK OF SUPERIORITY IN A GAS BURNER



BARBER

Gas Burners

The name Barber is a symbol for the finest in gas burners. This has been true for over 30 years.

Barber has developed the modern automatic gas conversion burner, for furnaces and boilers, to a high point of efficiency and economical operation. Also, makers of many of America's foremost gas appliances for all industrial, commercial, and household uses, have for years equipped their products with Barber Burners. Barber both designs and supplies a very great variety of units for such purposes, always accurately adapting the burner to the specific application and the type of gas to be used.

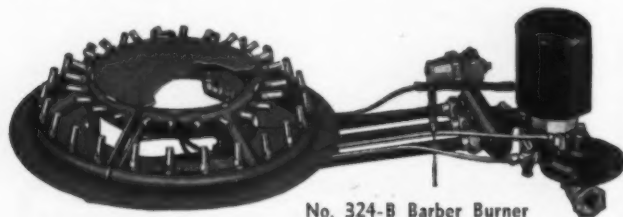
For the utmost in performance and dependability, be sure that the gas appliances you sell or sponsor are equipped with genuine Barber Burners and Barber Pressure Regulators.

Write for Catalog illustrating and listing many types of Burners for Appliances, Gas Conversion Burners for Furnaces and Boilers, Regulators, and Controls.

THE BARBER GAS BURNER CO.

3704 Superior Avenue

Cleveland 14, Ohio



No. 324-B Barber Burner



No. 47-108B
Barber Burner

INDUSTRY ITEMS

R. V. CLARK, formerly District Manager of the Dayton Office of Penn Electric Switch Company, Goshen, Indiana, has been made



R. V. Clark

Manager of Heating Control Sales for the company. Mr. Clark will make his headquarters at the main office in Goshen, Indiana, and will be responsible for the sale of automatic heating controls to the oil burner, stoker and gas markets. To succeed

Clark in the Dayton

Office, the company has appointed E. A. Price as District Manager.

In addition, Penn has announced the opening of a new Cleveland sales office in Room 902 of the NBC Building at 815 Superior Avenue. W. S. Lossie has been made District Manager of this new Cleveland territory.

JOHN W. AKINS, JR., is now Central Division Manager of Comfort Equipment Corporation, Chicago national sales agent for Freeman Stokers, Quaker and Comfort heating products. Mr. Akins will be in charge of the territory that includes Northern Illinois, Western Missouri, and all of Iowa, Nebraska, Wisconsin, Minnesota, North and South Dakota.



J. W. Akins, Jr.

SAMPSEL TIME CONTROL, INC., Spring Valley, Illinois, has announced the appointment of Paul R. Jett, St. Louis, and William B. Forrest, Detroit, as sales representation for Sampsel in their respective territories.

Mr. Jett will handle representation for Sampsel Controls throughout Southern Illinois, Central and Eastern Missouri. He has been connected with the heating and automatic control trade in this area since 1938.

William B. Forrest has been similarly identified with the heating industry in Michigan since his release from the Army Air Force. He will represent Sampsel for the entire state of Michigan.



Paul R. Jett

TRIANGLE PILLOW BLOCK

No other bearing provides all of these advantages for air conditioning equipment:

1. Quiet, shock-absorbing, vibrationless operation.
2. Perfect self-alignment.
3. Self-lubrication over long periods of service.
4. Scientific design for compactness and minimum obstruction to air flow.

Tell us your needs and we will send illustrations of various types of mountings, specifications and complete information.

TRIANGLE MANUFACTURING CO.
392 Division St. Oshkosh, Wis.



Large oil cup keeps wick saturated for years of operation.

Oversize felt wick feeds oil to bearing.

Porous bronze bushing feeds lubricant from wick to shaft as needed. Easily replaceable.

Steel retainer sleeve holds bushing, cushion and wick in proper relation.

Thick resilient oilproof cushion supplies a vibration-absorbing element between bearing and housing. Impervious to oil or hardening action.

Pressed steel ball formed around inner assembly holds parts rigidly in position and makes an oil tight seal. Assures perfect alignment through ball-and-socket action.

You'll Sell Your Customers More When You *Sell Them Clipper*



Here is a typical Clipper air-conditioning furnace with front panels removed to show easy accessibility of controls, blower and burner equipment.

Not only do Clipper automatic gas-fired furnaces with the Multi-Stream Heat Exchanger offer efficient economical heating, but also modern air conditioning for the greatest living comfort.

COMPLETE RANGE OF SIZES. Clipper furnaces are built in a range of sizes from 80,000 to 200,000 BTU.

COMPETITIVE PRICES. Despite their fine engineering, heavy gauge metals, highly improved controls and other features, Clipper gas-fired furnaces are priced in competition with ordinary furnaces.

IMMEDIATE SHIPMENT. Due to the size of the Henderson plant, equipped with the most modern machinery and to the fact that the plant is located in one of California's most productive climates where steady home-owning mechanics are available, we are able to give you immediate shipment of any model.



Compact, with baked enamel finish, the Clipper is attractive for installation anywhere. Clipper units are easily installed even in a small closet. All Clipper furnaces, regardless of size, are shipped to you completely assembled, completely wired and individually tested at the factory.

You'll Find the Clipper Enables You to Sell More—For complete information on Clipper gas-fired units and also on the details of a profitable sales representation plan, fill out and mail this coupon.

HENDERSON FURNACE AND MFG. CO.
SEBASTOPOL, CALIFORNIA

Henderson Furnace and Manufacturing Co.
Sebastopol, California

I am interested in the sales opportunities of Clipper furnaces. Please send me complete information.

Name

Address

City State

STEEL ANGLE RINGS

Accurately Rolled To
Meet Your Specifications



Regardless of whether you are installing a ventilating, dust collecting, fume disposal or any other type of sheet metal pipe assemble, you can speed up, safeguard and improve your work with Chicago Metal Rolled Steel Angle Rings. They are accurate in all dimensions, free from distortion and have a perfectly smooth surface that assures a tight joint. Available in 6 to 26" diameters, larger sizes rolled to your specifications.

Write for list of sizes and net price list.

Also Sheet Metal and Heating Supplies

- * Moncrief Furnaces
Coal — Oil — Gas
- * International 85 - 150 Oil
- * Oil Burners - 275 Gal. Oil Tanks
- * Oil Gauges - Oil Filters - Oil Lifters
- * Blowers - Humidifiers
- * Master Blowertrol - C. A. C.
- * Controls
Minneapolis-Honeywell • Samsel
- * Western Turbine Ventilators
- * Accurate Ventilators
- * Conductor Elbows - Mitters - Etc.
- * Glatt Gutter Anchors - Wire Hangers
- * Sheet Copper Cold and Soft Rolled
- * Blow Pipe Ells - Blast Gates

*Complete Catalog and Net Price Sheet
on Request.*

CHICAGO METAL MFG. CO.

3733 S. ROCKWELL STREET, CHICAGO 32, ILLINOIS

INDUSTRY ITEMS

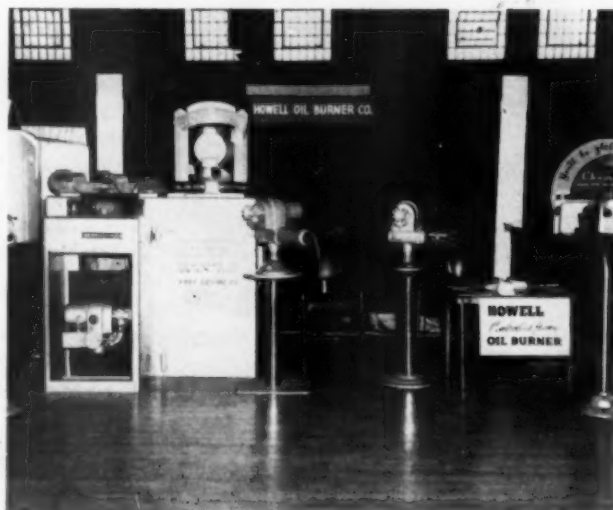
VIKING AIR CONDITIONING Corp. of Cleveland, Ohio started off a new powerful sales campaign with a sales meeting which was called recently in that city. Salesmen covering the entire United States arrived to attend an intensive three day session.



The group shown in the photograph was getting a preview of the new Viking Blower Package which has been completely redesigned. During the sessions which were held morning and afternoon, talks were given by company executives concerning new engineering developments, new styling, sales policies, advertising and promotion campaigns.

THE H. A. HOWELL OIL BURNER CO. booth at the recent "Better Home Show" in Dixon, Ill., was equipped with two domestic model burners. One—the conventional pedestal type burner and the other the flange mount, mounted on a Syncromatic oil burner unit.

The booth also contained a cut-away model of the Howell oil burner which is used to illustrate the many outstanding features of the burner and to show the new patented combustion head which enables the Howell oil burner to burn catalytic fuel oil cleanly and completely. This new firing head is standard equipment on all Howell burners.





the Crestrol temperature regulation system

- CONTINUOUS AIR CIRCULATION
- MODULATING DELIVERY TEMPERATURES
- FOR ALL FUELS
- LOW IN COST
- EASY TO INSTALL
- A NEW CONCEPT OF COMFORT

This amazing new system is easily added to any existing control system. Through a simultaneous regulation of both the room temperature and the temperature of the air supply for the room, warmed air is constantly circulated without blasts of heat, and without cool "off" periods.

There is no other item in the warm air field that will bring you so much profit from one hour of installation time.

In addition our consumer plan does the selling for you. If you are interested in perfect heating comfort for your customers, and the most profitable sales program yet offered, write for complete details.

Crest Industries

INC.

Chicago 1, Illinois

75 EAST WACKER DRIVE

Home Owners' Favorite



THE FAMOUS ROUND OAK MOISTAIR BLENDED-IRON "J" SERIES FURNACE

A great favorite with thousands of home owners for years, the Round Oak Moistair Blended-Iron "J" Series Furnace is always in demand, always good for your business. This moderately priced, top-quality unit is engineered to provide an abundant supply of warm, moist, dust-free, gas-free air with exceptional economy of coal. Diamond-shaped, one-piece radiator assures delivery of more heat; oversize water reservoir gives added humidity protection, and there are many other outstanding features.

Round Oak manufactures a complete line of efficient, dependable warm air furnaces, including both blended-iron and boiler-plate steel units—for coal, coke, oil and gas.

REPAIR PARTS

Repair parts are immediately available for all Round Oak furnaces now in service.

Write for information on the entire line today.

ROUND OAK CO., INC., OF INDIANA • DOWAGIAC, MICHIGAN

Furnaces • Oil Burners • Air Conditioners • Ranges



INDUSTRY ITEMS



Frank Gerlach

ANTHRACITE INSTITUTE has added a new field representative to its Canadian staff in conjunction with its recently increased promotional and advertising activities in Canada.

The new representative, Carlton J. Lottridge, of Stoney Creek, Ontario, will work under W. J. Cusack, senior Institute representative for Canada.

Mr. Lottridge engaged in the retail coal business, 1931 to 1939, served as a civilian employee of the Canadian Air Force, 1940 to 1944, and comes to Anthracite Institute from sales managership of Supertest oil burners in Ontario.

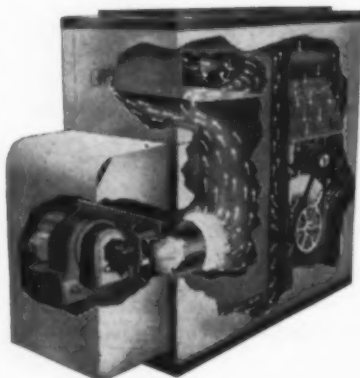
GENERAL FILTERS, INC., Detroit, has announced the appointment of Frank Gerlach as factory representative for the New England territory comprising Massachusetts, Vermont, New Hampshire and Maine.

Gerlach is well known throughout this territory having served as Chrysler Airtemp and Automatic Burner representative in this territory. He will make his headquarters at 61 Wellington Road, Manchester, Conn.



L. J. MUELLER FURNACE COMPANY, Milwaukee, Wis., recently played host to heating, air conditioning and refrigeration students of the Milwaukee School of Engineering, who toured the 15-acre Mueller manufacturing site on two successive days.

While all phases of furnace design and manufacturing were presented, emphasis was placed on the extensive experimentation and testing required before a Mueller unit is pronounced marketable. Specific types of furnace design were discussed and actual tests on gas and oil heating units and summer cooling equipment were conducted for the student group.



GREATER DEALER PROFITS!

- ★ LOWER COST TO YOU . . . production line assembly.
- ★ PACKAGED UNIT . . . no set up required.
- ★ EASILY SERVICED . . . all standard parts used.

Can be delivered to average basement completely assembled. Where necessary canopy and burner can be removed in a matter of minutes reducing length to 4 feet. HEAVY STEEL BOTTOM eliminates cementing.

SHIPPED COMPLETE WITH: Gun Type Oil Burner (Underwriters approved). 12" Blower (with motor). Stainless Steel Comb. Chamber. Standard Size Filter. Automatic Drip Humidifier. Automatic Draft Regulator. Thermostat. Stack Switch. Comb. Fan & Limit Control.

SPECIFICATIONS:

Length overall	62 in	Height	52 in
Width	24 in	BTU Cap. (at bonnet)	100,000
		Shipping Weight	525 lbs.

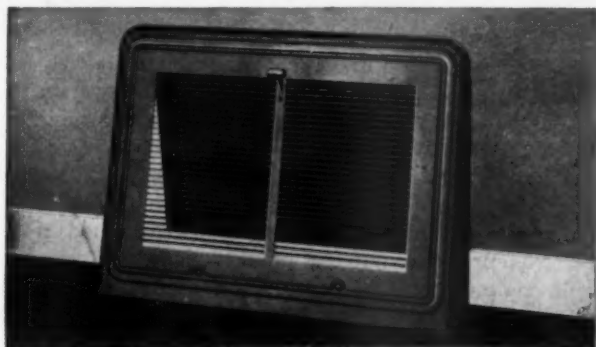
Manufactured by
STANDARD HEATING EQUIPMENT CO.
Waterloo, Iowa





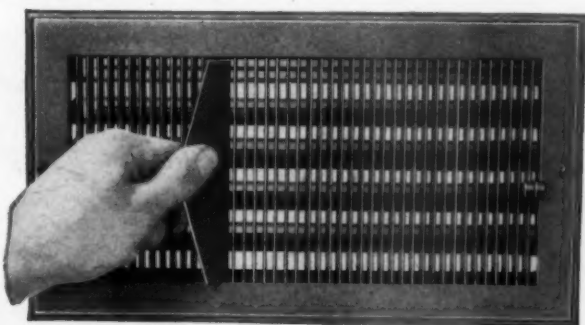
NOW YOU CAN GET THE BEST!

The day is practically here when you no longer have to be satisfied with unmatched register designs of short-line producers. Standardize on U. S. for outstanding beauty, efficiency, sensible prices, and lower installation costs.



No. 40 SERIES Gravity Baseboard

For today's smart new homes, or modernized old ones, this is the Ideal Register. With either gravity or converted-gravity forced-air systems its large "free area" gives perfect results. Removable grille . . . patented engaging buttons . . . no loose screws to be lost . . . definite savings on installation time.



No. 256 4-WAY FLOW AIR-CONDITIONING REGISTERS

The finest registers for your high class contracts. Functions perfectly in sidewall or ceiling with any direction of air approach. Multiple valves and grille bars can be set for any directional air-flow desired.

Send for latest Catalogs.

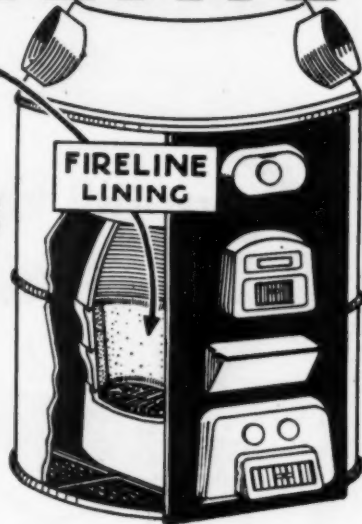
UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

Fast Fixing FIRELINE

turns
repair jobs
into profits
at top
speed



You can take on more repair jobs when you use Fireline. There's no need to dismantle the furnace or wait for castings. The whole job can be done in a few hours. Fireline is a means of completely renewing the firepot—a high-quality refractory moulding material in moist, plastic form which forms a complete lining entirely around the inside of the castings. The fire bakes it into a durable, one-piece lining that withstands temperatures up to 3000 deg. F.—a far higher temperature than ever occurs in a domestic furnace.

You install Fireline easily and quickly through the furnace door. Just pound it into place with a hammer, then trim it smooth. That's all there is to it. There's nothing to mix, nothing to add. Fireline seals all cracks and holes in the firepot castings; stops leakage of gas, odors, soot into the building. Fireline also preserves firepots still in good condition and improves combustion efficiency by reflecting and radiating heat across the entire fuelbed.

With Fireline you can handle more repair jobs. You save your customers money. You make a higher profit percentage.

Ironset Asbestos Furnace Cement—the high-quality cement for setting up new furnaces and re-cementing old ones. Withstands higher temperatures. Will not crack, shrink,



bloat, or blister. Makes your work more permanent. Try it on your next job and see how Ironset builds up your reputation for permanent, gas-tight work. You can't afford to use any cement but the best—and that means Ironset.

Fire-Hearth Castable

— the ideal refractory for setting stokers, forming precast combustion chambers and boiler tile. Easily installed.

Just mix with water, pour into place, and trowel smooth. That's all there is to it.



Fireline heating specialties are carried by leading jobbers. Write for free descriptive literature, prices, and discount.

FIRELINE STOVE & FURNACE LINING CO.

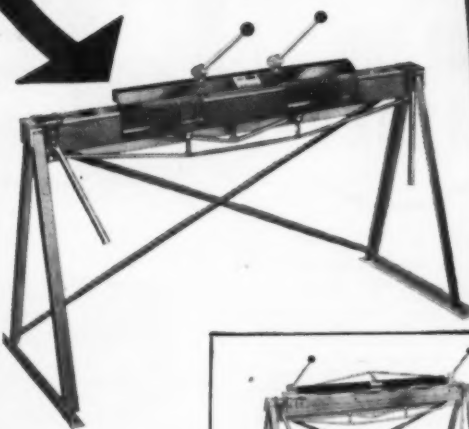
1816 N. Kingsbury St., (Dept. G), Chicago 14, Ill.

FIRELINE

HEATING SPECIALTIES

Announcing the **NEW, Improved** **WEBCO** Portable Sheet Metal Brakes

with
OPEN END BARS!



The new WEBCO Portable Sheet Metal Brakes, with their exclusive advantages, give you greater all-round serviceability than any other brake built. They can be furnished with open end bars and adjustable finger assemblies to handle a variety of work done by no other portable brake. Improved hinge assembly assures consistently accurate, clean bends on sheets (steel, aluminum, copper, or lead) up to 18 gauge, depending on model and folding arm used. High tensile steel cams handle easily to exert tremendous pressure . . . evenly . . . throughout length of the clamping bar, with automatic adjustment for all gauges. Open end bar gives you 37" working width, face; 12 1/4" width each end of bar. Standard bar gives you up to 49" through, 53" face. Stands are detachable, are adjustable to give firm support on uneven flooring.

There are a hundred and one bends that a WEBCO Portable Brake can make for you—on the job or in the shop—quickly, accurately, profitably! Write today for full information, or contact your local supplier. No obligation. Webb Machine and Tool Co., Coraopolis, Penna.

WEBB MACHINE & TOOL CO.
CORAOPOLIS, PENNA., U. S. A.

INDUSTRY ITEMS



At the HOME BUILDERS' EXPOSITION which was held recently in Los Angeles, the Sugden Engineering Co. of that city maintained a booth that is shown in the photograph. The part of the exhibit which caused the most comment can be seen at the left in the photograph and consisted of a model home in the rough stage with a forced air heating system roughed in and air traveling through the pipes. There was considerable comment on this exhibit and apparently those in attendance at the Exposition were quite enthusiastic about warm air heating.

IN A RECENT PERSONNEL ANNOUNCEMENT Mueller appointed Robert F. Hume as field service manager. Since 1946 Mr. Hume has been assigned to the company's Product Engineering Department. His new responsibilities include customer relations on all problems involving maintenance and product, as well as the preparation of field service information releases.



R. F. Hume



E. C. Nahill

Edward C. Nahill is the new manager of the Heating Division of Comfort Products, Inc., Philadelphia, Pennsylvania. This company is a distributor of the L. J. Mueller Furnace Company, Milwaukee, Wisconsin for Southeastern Pennsylvania, Delaware and Southern New Jersey. Before joining Comfort Products, Mr. Nahill had been eastern division manager for York-Shipley, Inc.

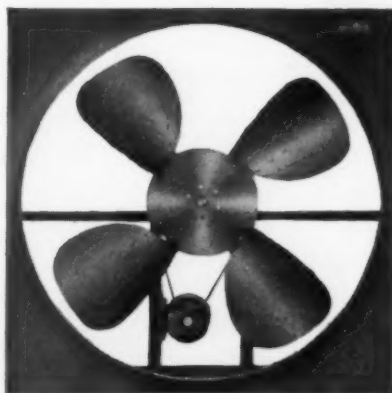


**"The Fan
that does its work
in a Whisper"**



You can increase your profits with advertising in your local paper directing customers to your store. Write for free mats and other Murray Sales Increases.

*Sell Now
for Sure Profits*



MURRAY ATTIC FANS

Now, during the hot-weather months, is the time to sell Murray Attic Fans. Every new building job or remodeling job is a good prospect for Murray Attic Fans. And you profit more by selling Murray Attic Fans. Murray Attic Fans are easy to install, are manufactured in four sizes to meet all needs.

THE MURRAY COMPANY

ATLANTA, GEORGIA

DALLAS, TEXAS



ANNOUNCING THE NATIONAL AUTOMAT

**Twin Fuel Conversion Burner
Comfort and Economy of Gas—The Protection of Oil**

Developed by the MIDWEST RESEARCH INSTITUTE and the GAS SERVICE COMPANY, of Kansas City, Missouri, and manufactured under license agreement. Constructed to meet Underwriters and A. C. A. Requirements.

Now you can offer a solution to gas shortage worries in the winter—but still offer all the comforts of gas. The National Automat provides oil heat *automatically* in times when gas may be in short supply! It is being nationally accepted—nationally approved—as the ideal burner for use in areas where heavy fuel demands so often cause gas shortages in cold weather. The National Automat can be installed easily, at amazingly low costs.

PREPARE FOR WINTER NOW!

How It Works . . .

The National Automat burns gas until the outside temperature drops to 20 degrees or less (depending on the local Gas Company requirements) at which time the outside thermostat automatically kicks it over to oil; as soon as the outside thermostat goes above 20 degrees the burner automatically switches back to the gas cycle again.

Nearly every Gas Company that prohibits gas furnace or conversion burner installations will allow this burner to be installed.

National Automat Is Permanent

Be prepared to satisfy the demand during the coming heating season.

For complete information write today.

National Engineering & Manufacturing Co.
523 Wyandotte Street Kansas City, Mo.

SEPTIC TANKS



Two Sizes . . . 300 and 500
gallon capacity. 14 Gauge
Steel, Black Asphalt coat-
ing.

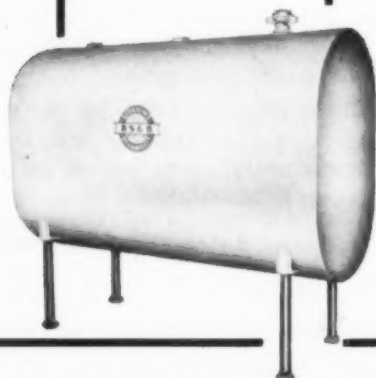
AVAILABLE FOR DELIVERY!

Top quality steel tanks, fabricated by a manufacturer with over 55
years' experience. Write today for prices and complete delivery in-
formation.

BLACK, SIVALLS & BRYSON, INC.

24th Floor, Power and Light Building,
Kansas City 6, Missouri

Capacity, 275 gallons. 14
gauge black steel, or alumi-
num. . . . Legs not in-
cluded.



BASEMENT TANKS

INDUSTRY ITEMS

IN A CLINICAL MEETING on the Simplenic System for warm air heating installations of Clayton and Lambert Manufacturing Company of Louisville, Ky., Edward H. Paul, sales manager, pointed out the system's advantage of low cost, quick assembly and simplicity.



The meeting was sponsored by Heating Trade Supplies, Inc. of Toledo, Ohio and was held for the benefit of dealer's service men and installers of heating equipment from Ohio, Indiana and Michigan.

Mr. Paul gave a detailed description of the Simplenic System.

REYNOLDS METALS COMPANY of Louisville, Ky., has recently made some changes in managerial positions of its Sales Division. F. L. Sargeant has been made manager of the New York Sales Division, succeeding Stuart Smith who has been appointed Special Representative to the United States Air Force with headquarters in Reynolds' Dayton, Ohio office.

Wilfred P. Lawless has been named Manager of the Nashville Sales Division of the Reynolds Metal Company. Mr. Lawless has been chosen to succeed S. F. Tiffany former Manager of the Nashville Division who has now been selected to head Reynolds' Dayton, Ohio Division.

INLAND STEEL PRODUCTS COMPANY, formerly Milcor Steel Company, recently announced the appointment of Gordon W. Matthews as Jobber Sales Representative in the Southeastern portion of the United States.

A graduate in mechanical engineering of Purdue University, Mr. Matthews worked for the Inland Steel Company before the War transferring then to Milcor Steel. After returning from Army Service, he came back to Milcor as a Plant Engineer. His headquarters will be at Atlanta, Georgia.



Gordon W. Matthews

PEXTO SQUARING SHEARS

Nos. 137 — 152
LENGTH BLADES 37"—52"

*New!
Adjustable
Graduated
Side Gauge*



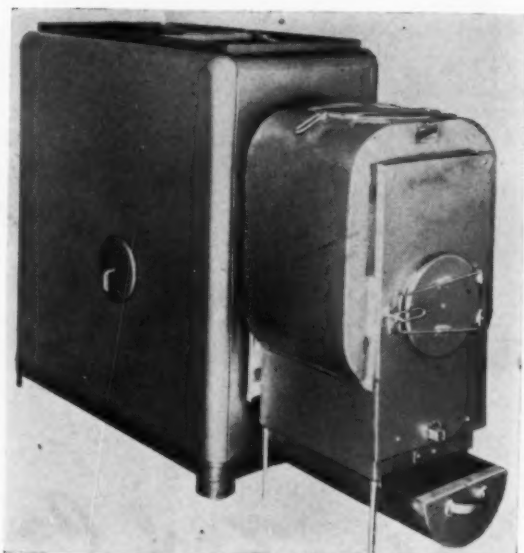
**PRECISION BACK GAUGE
SOLID HOUSINGS
ENCLOSED COMPRESSION SPRINGS
STEEL TREADLE
DYNAMIC SAFETY COLORING**

THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHINGTON, CONNECTICUT, U. S. A.

19PX48

TJERNLUND "QUICK HEAT" LEADS THE WAY!

Announcing A New Addition to Our Growing Line



**COAL AND OIL IN ONE UNIT
WITH EXCELLENT RESULTS**

FEATURES:

With our efficient hopper fed coal attachment coal can be used with "Quick Heat" units without removing the oil burner.

Both coal and oil can be burned simultaneously or separately with equally efficient results. In case of power failure or on new construction coal unit can be attached and will provide adequate heat with "Quick Heat's" excellent gravity circulation.

Our coal unit has vital parts constructed of high grade heat resistant stainless steel.

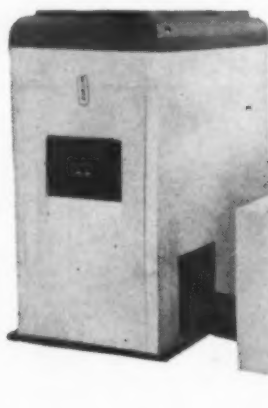
We also manufacture ceiling and wall hung industrial oil burning units in sizes up to 700,000 Btu's.

WRITE FOR LITERATURE AND INFORMATION

Manufactured by

The TJERNLUND MFG. CO. 2140 KASOTA AVE., ST. PAUL 8, MINN.

Your Sure Answer to this Winter's



HEATING PROBLEM!

**The New SCHWAB
STOKER FURNACE
UNIT**

Coal - Gas - Oil

YOU will have demand from customers and prospects shortly for efficient heating. The Schwab Stoker Fired Furnace Unit is a sure answer since it can be converted from one fuel to another within a few hours, without loss of efficiency.

Made of heavy boiler plate and heavy sheet steel electrically welded, the Schwab complete air conditioning unit is engineered and constructed in the most modern fashion. Increased production facilities assure quick deliveries. Write today for full information. By every count, the Schwab Furnace Unit is the proved way to satisfied customers—and profits!

THE SCHWAB SAFE COMPANY
LAFAYETTE INDIANA

Kruckman—

(From page 69)

with the spirit that could make a gathering so completely and wholly American as this was in every sense. It gave one pride in American institutions, and in the visible, audible evidence that they still existed. And, with Truman's fighting speech, at 2:30 a.m. Thursday morning, one felt that perhaps there might be something in the claim of the Democrats that Dewey might not have quite the walk-over one took for granted at the Republican convention. It seems doubtful that Truman can be re-elected with the urge there is abroad for some change; but after watching the steps that produced the results in the Democratic convention you feel the still free processes of American political institutions give the people a reasonable chance to effect almost any result.

The Platform

The Democratic platform, like the Republican platform, discusses other issues besides housing and civil rights. Promises are made about taxation, about the Taft-Hartley Act, the minimum wage scale, Social Security amendments, national health, Federal educational expansion, farm problems, anti-trust controls, more cooperatives, small business, and other wants close to the hearts of people in all parts of the country. It is an unhappy commentary on our political mores that we take these platform promises with absolute skepticism. It came to one forcibly at the Democratic

Extra Profits In Blower Installations with

Vent-Air

General Purpose
**CAST ALUMINUM
UTILITY BLOWERS**

V-5—6" (less motor) - - - \$19.00 Net

V-10—7" (less motor) - - 24.00 Net

V-20—9" (less motor) - - 36.00 Net

SIZE	INLET	OUTLET	WHEEL DIA.	CFM	REC RPM	REC HP
V-5	6"	6"	6 1/4"	550	1750	1/4
V-10	7"	7"	7 1/4"	1180	1750	1/2
V-20	9"	9"	9 1/4"	2280	1750	3/4 or 1

Blowers are of light weight, sturdy, cast aluminum—non-sparking. Standard diameter inlet and outlet—fit stock size pipe. Adjustable base—fits any standard motor. Adjustable discharge—rotates to four positions. Wheel statically balanced.

We Can Supply Motors for Each Unit, If Desired

• MAXIMUM AIR DELIVERY • MINIMUM OVERALL SIZE AND WEIGHT



**MOTOR NOT
INCLUDED**

Installed with used or new motors—VENT-AIR provides a compact, efficient blower set that permits you to make a good profit for your time and trouble. Order a VENT-AIR today. Send purchase order or cash. Shipped F.O.B. Detroit.

Fried Air-Kool Co.
8205 LYNDON
DETROIT 21, MICH.

**Easy to Sell—
Easy to Install
Swartwout's
3 Popular Types of
Roof Ventilators**

You can supply your customers' ventilating needs promptly with Swartwout high quality ventilators, and save your precious sheet stock for other needs. Write or wire—

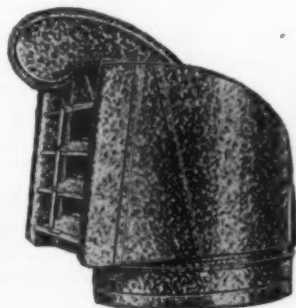
The Swartwout Company

18615 Euclid Avenue

Cleveland 12, Ohio

ROTARY

An old stand-by—the original ball-bearing ventilator for a thousand uses.



AIRJECTOR

The motorized ROTARY—low-cost operation for efficient power ventilation.

AIRVALVE

Greatly improved, highly efficient simple round-type ventilator for city or farm.

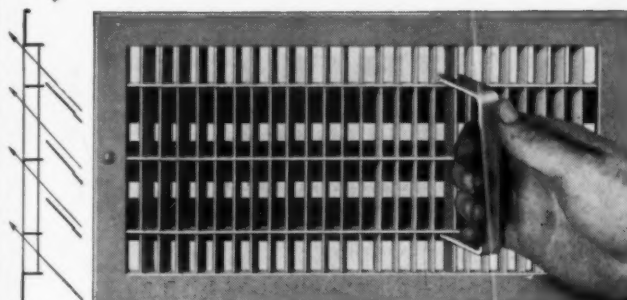


Swartwout
Controlled Air Circulation

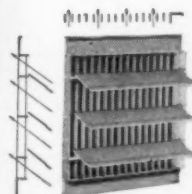
EQUIPMENT FOR EFFECTIVE ECONOMICAL
VENTILATION OF INDUSTRIAL BUILDINGS

INDEPENDENT

**"Fabrikated"
WALL GRILLES WITH
DEFLECTING VANES**



Style 321-A grille
with deflecting vanes



Rear view showing
adjustable deflect-
ing vanes

ACCURATE and positive compound deflection of air flows can be readily secured with these "Fabrikated" grilles. Directional adjustments may be made when grilles are installed; or grille bars and vanes may be adjusted after installation to meet unforeseen or changed requirements.

Each grille bar and each deflecting vane is adjusted *individually* with a special two-pronged tool included with each shipment. Locking of grille bars and vanes is not required because they are held firmly in place—no vibration—no rattle.

Write for Our New Catalog No. 48.



Always Leading—Always Progressing

**THE INDEPENDENT
REGISTER CO.**

3747 E. 93rd STREET • CLEVELAND, OHIO



NO TIME LOST!

with the General Automatic Highboy
(CM-85)

This Winter Air Conditioning Oil Furnace
is Built for

✓ Quick and Easy Installation
(comes completely assembled)

✓ To Occupy Minimum Space
(60" high on a 4 sq. ft. space)

✓ For Clean, Unobstructed Appearance
(Burner mounted in back. Sides and front free)

✓ To Give Long Lasting Economical
Owner Satisfaction
(Fired by New P-C BURNER for maximum efficiency)

GENERAL
Automatic
Est. 1924

Checks First . . . With the Finest
General Oil Burner Corporation
2300 Sinclair Lane, Balto. 13, Md.

convention that under all these surface issues, international, and domestic, basically the conflict is between those who believe in the dignity of individual liberty, equality, independence, and those who honestly and sincerely feel that the mass of the human race, regardless of color, race, status, can go somewhere in time and space only under strong authoritarian leadership, and guidance of superior minds. It is obvious, when you match thoughts with foreigners at a convocation such as these Philadelphia conventions that we have achieved a degree of individual independence almost unbelievable to the foreigners. They still can only see issues as symbolized by persons. FDR still is to them the symbol of America. His portrait and Mr. Truman's picture hung over the rostrum. There was unquestionably more meaning to many persons in the portrait of Roosevelt than in all the words spoken in the convention. Our foreign friends constantly asked embarrassing questions. They wished to know if it is the function of our Congress to answer our puzzling domestic political problems; and they insisted that we are rapidly drifting towards a system of regimentation under superior guidance. They pointed to our new draft of men and industry. And they wanted to know if the governmental centralization which would follow the application of the principles of the Supreme Court decision in the basing point case, and the salt case, would be followed from the economic and social standpoint by decentralization of industry, which would mean less mass production, less wealth, and a dispersion of large cities? Would this give us a highly concentrated government mechanism with many more

"CORRECT PRACTICE IN INDUSTRIAL SHEET METAL WORK"

200 Pages—8½"x11"—\$1.50

Contains all basic design and engineering data necessary for the proper planning and installation of fume removal, dust collecting, wood-waste removal, ventilating and other industrial sheet metal systems and equipment. Made up in the main of data published in the Sheet Metal Section of "American Artisan," this book offers dozens of practical designing ideas, layouts, installation kinks, tables and charts, contributed from their experience by many of the country's leading industrial sheet metal experts.

KEENEY PUBLISHING COMPANY

6 North Michigan Avenue

Chicago 2, Illinois

CORRECTION

Through an error in our proof reading the General Oil Burner Corporation advertisement in AMERICAN ARTISAN's July issue read in part as follows:

"The CM-85 Winter Air Conditioning Furnace is one of the tangible reasons why the General Electric family is growing so fast."

This should have read:

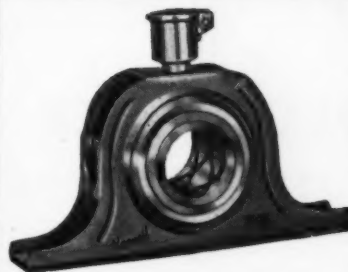
"The CM-85 Winter Air Conditioning Furnace is one of the tangible reasons why the General Automatic family is growing so fast."

**14 WAYS
BETTER...**

*double
lubricated*

**RANDALL
PILLOW
BLOCKS**

self-lubricating
self-aligning
minimum maintenance
big oil reservoirs
economical
quiet
smoother running
longer lasting
trouble-free
easy to install
sturdy housing
precision machined
phosphor bronze
bushings
double-lubricated

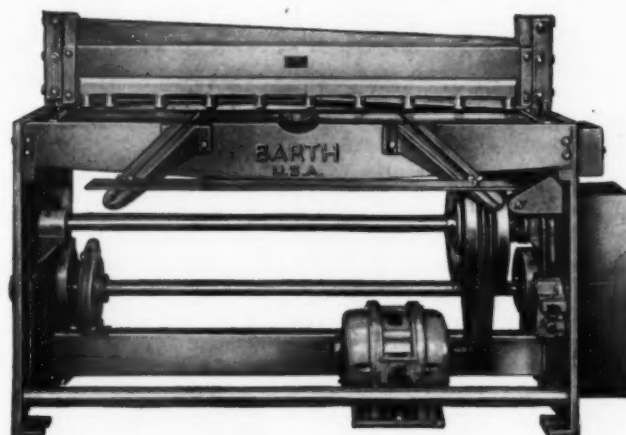


One-Piece Steel Housing Pillow Block. Most popular of eight types of *double-lubricated* pillow blocks in the complete Randall line. Single or double oil reservoir. Mounts in any position.

Check Randall's exclusive oil-plus-graphite *double-lubricated*

design and the complete Randall line. Write for Catalog 47.

Randall Graphite Bearings, Inc.
Dept. 811, 609 West Lake St. Chicago 6, Illinois



BARTH Power Shears

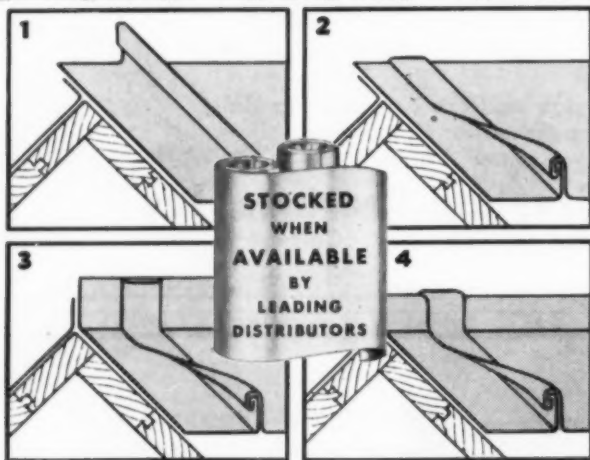
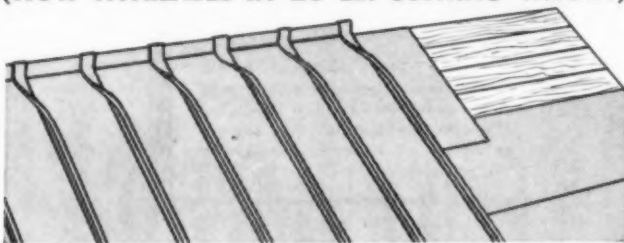
Absolute finality in design and construction, these 14-gauge Power Shears represent long, careful study of the sheet metal fabricator's needs. Many outstanding features make these shears another progressive addition to the rapidly expanding BARTH line. Available in 52" and 72" sizes.

THE BARTH MANUFACTURING CO., Milldale, Conn.

eliminate cross-seams in ridge comb roofs with

FOLLANSBEE

SEAMLESS TERNE ROLL ROOFING (NOW AVAILABLE IN 20 LB. COATING WEIGHT)



Ridge Comb Finished With Standing Seam Using
Follansbee Seamless Terne Roll Roofing

You can apply Follansbee Seamless Terne Roll Roofing on roofs of any style—with any type of ridge treatment. You'll find it advantageous to use Follansbee Seamless Terne Roll Roofing because it's so easy to handle and install.

The seamless 50-foot rolls can be cut into panels of any required length and laid without cross-seams. This is just one of the time-saving advantages of Follansbee Seamless Terne Roll Roofing.

You'll find other advantages that mean extra profits when you install Follansbee Seamless Terne Roll Roofing on your next maintenance or repair contract. Now supplied in 20 lb. coating.

FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES • PITTSBURGH 30, PA.



Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. Sales Agents—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle, Toronto and Montreal, Canada. Plants—Follansbee, W. Va. and Toronto, Ohio.
FOLLANSBEE METAL WAREHOUSES: Pittsburgh, Pa., Rochester, N. Y., and Fairfield, Conn.

COLD ROLLED STRIP • POLISHED BLUE SHEETS • ELECTRICAL SHEETS
SEAMLESS TERNE ROLL ROOFING

small communities? They raised the question about the continued existence of a wealthy democracy in a world filled with great centralized authoritarian government structures. They wanted to know if we actually believed in slowing down our present system of mass production, with its great wealth expansion; and they asked, if this was actually put into effect would it not lower our standards of living, our brilliant flowering in the educational products of technology and science? It was quite apparent from these discussions, which usually occurred in the Pennsylvania lounge, that they saw the civil rights conflict as the touchstone which might determine whether we would go farther on the route to democracy, or become jelled into a more authoritarian state. Quite patently they saw in the civil rights program the antithesis of the authoritarian systems that are springing up elsewhere. They maintain that great cities, great concentrations that make huge communities of people inevitable, require more discipline in business, in social life, and in political systems. If you follow this reasoning to its ultimate it means apparently that One World can mean only less liberty, less independence, more regimentation; and that the smaller units apparently would mean more freedom.

Town Meeting Technique

The British observer suggested that apparently the Democratic convention had a germ of thought that might be applied to the problem. He saw in it the use of the old town meeting technique in outer form, with the elder brothers in the background to make the plans and to guide the performance. This, as he saw

FOR THAT PERFECT
ROLL
IN SHEET METAL

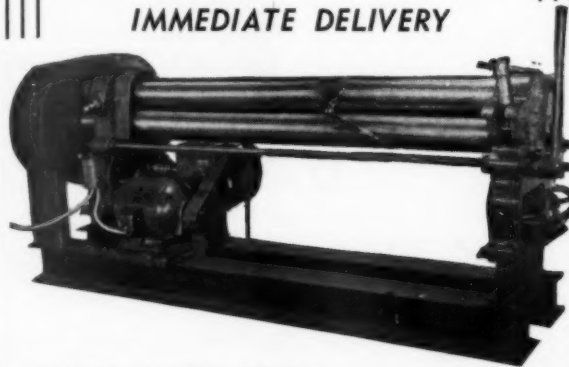
THE NEW 6" DIA.

MILTON

SLIP ROLL FORMING MACHINE

Rolls Manufactured 1" to 6" in diameter ...
to 10' length. Handles up to 1/4" capacity.
Hand or Motor Driven Models

IMMEDIATE DELIVERY



DEALERS INQUIRIES INVITED

MILTON EQUIPMENT CO.

402 Race St.

Phila. 6, Pa.

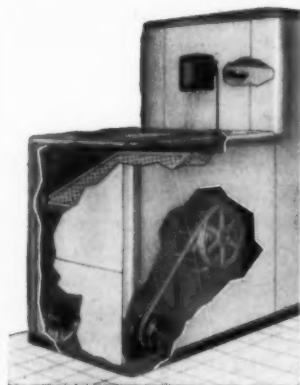
WA Inut 2-1734

MASTER

TEMPERATURE CONTROLS

The Master Blowertrol

This is the answer for users of forced air heating who want to avoid cold drafts, air stratification and "cold 70".



Blowertrol Installed

It starts the motor at a plenum temperature of 100° and gradually increases the speed of the blower as the plenum temperature rises until it reaches 125°. The blower operates at full speed until the plenum temperature drops below 125° at which point it gradually decreases speed as the plenum temperature drops.

Heat Regulators

A 12 Thermostat:

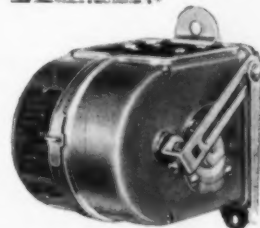
This thermostat is designed for two-wire operation and is regularly furnished in an ivory colored plastic case. It has a sensitive bi-metal blade, magnetic snap-action and shield to protect the contacts from dust.



Type A 12
Thermostat

Spring Return Motor:

This is a deluxe model of a damper motor with many new features. It operates to two positions. When the thermostat is satisfied or the electrical power fails the motor is immediately returned to the CLOSED or OFF position by a heavy internal spring built right into the motor.



Type B 12
Spring Return Motor

WHITE MANUFACTURING CO.
2368 University Ave. Saint Paul, Minnesota

Save yourself TIME and MONEY

Order Furnace Fittings from

"Made-Rite"



INVESTIGATE MADE-RITE CONNECTING LOCK STRIP

Patent Pending

Here's a time and material saver for speedy and air tight installations of trunk line and wall stack fittings with all the "Know How" of years of experience in the manufacture of precision "Made-Rite" fittings. Write for complete details today and you will receive our prompt attention.

NO JOB can be better than the fittings you use and no fittings can be better than ours. We've always made a conscientious effort to supply the finest fittings and get them out to our customers with a minimum of time and trouble.

You'll find that dealing with us will be a pleasant and profitable experience. We have a complete line of fittings and accessories to meet your every need and we're sure you'll agree that one order will lead to many more.

Wholesale jobbing inquiries respectfully invited and will receive our usual prompt attention.



"Made-Rite" Co., Inc.

10th & Monroe St. Newport, Ky.



AIR-FLO
AUTOMATIC
CEILING SHUTTER
FOR ATTIC FAN

Built so they can be installed practically flush with the ceiling, AIR-FLO Ceiling Shutters present a refined, finished appearance. Their natural aluminum color blends with any decoration, eliminating need for painting, and no grille or winter cover is required. Furnished in 5 different widths, single panel up to 73" long. No operating mechanism shown. Built-in fusible link. Meets fire underwriters requirements.

WRITE FOR NEW CATALOG 43-C
Illustrations and details of the complete AIR-FLO line.

AIR CONDITIONING PRODUCTS Co.
2340 W. LAFAYETTE BLVD. • DETROIT 16, MICH.

it, provided the elasticity which would permit a certain modicum of authoritarian leadership, but would not lead to the unyielding autocracy and stiffness of the systems in Russia, and elsewhere in Europe and Asia, with the complete subordination of the individual, and the need for blind and unquestioning obedience. What he apparently was trying to say is that under our system we submit freely to any disciplines that are necessary for the common good, but that we also freely debate the liberties we may surrender before we permit them to be modified. The summary of it all is, of course, that there is inherent in this campaign, which flows from the Philadelphia conventions, influences and effects which will profoundly change the future of the United States. And that is a thought of paramount importance to every business man in the nation.

Report on Panel Heating

SHEET METAL CONTRACTOR'S NATIONAL ASSOCIATION has issued a special report entitled *Panel Heating with Warm Air* based on material originally published in AMERICAN ARTISAN. The paper was first presented by J. D. Wilder, executive secretary of the association, before the Summer Meeting of the National Warm Heating and Air Conditioning Association in June, 1947. The mimeographed form was edited and approved by the Warm Air Heating Committee SMCNA, Walter J. Keist, Pittsburgh, chairman.

The report is available in limited quantities to members of the association and contractors wishing to join the association. Other parties not eligible for member-



Service Free SPHINX FURNACES are unsurpassed for Clean, Automatic, Economical Heat.



No dealer inventory on Conversion Burners, which are built to specifications and shipped 3 days from receipt of order.

NOW AVAILABLE FOR NATIONAL DISTRIBUTION

SPHINX

Custom Built GAS and OIL FURNACES
and GAS CONVERSION BURNERS

SPHINX Furnaces and Conversion Burners are approved by A. G. A. under 1948 requirements and have been proved by years of service. They are easily installed and will deliver efficient top performance with minimum maintenance. Their many special patented features assure quick sales at fine profit.

There is a Custom Built SPHINX Conversion Burner for every type and size of heating unit, whether it be for a 16 x 16 inch or a 10 x 10 foot fire box. 75,000 to 750,000 B.T.U. Capacity.

SELL SPHINX... The Complete Line that offers Custom Built Conversion Burners and both Gravity and Winter Air Conditioning Units... and ENJOY EXTRA PROFITS.

Write Today For Sphinx Dealer Plan

AUTOMATIC GAS-OIL FURNACES



C. L. BRYANT CORPORATION
4610 ST. CLAIR AVENUE • CLEVELAND 3, OHIO



Breidert Air-X-Hausters

(PAT. NO. 2269428)

**the first scientific
improvement in roof ventilators
in over 50 years!**

No matter which way the wind blows, no matter how foul the weather—the Breidert *provides positive exhaust*. Designed in accordance with the science of aerodynamics, this revolutionary ventilator utilizes the power of air currents coming from *all angles* to provide safe, positive ventilation without back-draft. Stationary—no moving parts to regulate or get out of order . . . no power consumption.

Breidert Air-X-Hauster—the first to be tested under all variable vertical and horizontal wind conditions . . . with certified ratings published.

Unlike most conventional ventilators which work efficiently only when wind strikes in a horizontal plane, the Breidert has been thoroughly tested—by U. S. Navy and Smith Emery Commercial Testing Laboratories—with the wind blowing in *all directions*. Its remarkably high performance ratings under all conditions are *certified and published*.

Used by Thousands of America's Leading Industrial Firms

Breidert Air-X-Hausters have found wide acceptance among architects, engineers, industrialists, farmers, home owners, ship and boat owners, U. S. Army, U. S. Navy, Maritime Commission, schools, institutions and public buildings. In every case when properly installed, the Breidert has never failed to fully meet every claim made for it!

Free Engineering Data Book, with complete specifications, sent on request. Address

"Ask to see this interesting demonstration"



G. C. BREIDERT CO.,
3129 SAN FERNANDO ROAD
LOS ANGELES 41, CALIFORNIA

Representatives in 50 principal cities throughout the United States

Get to know— THE NEW **CHASE** THRU-WALL *Copper* FLASHING (3-Way Bond!)

GET the full story about this improved copper flashing with the unique, binding, saw-tooth corrugations.

Advantages:

- 1 A 3-way bond flashing that is priced economically.
- 2 When you install Chase Thru-Wall Copper Flashing, you offer the best—*pay no more*.
- 3 Easily bent by sheet metal contractor.
- 4 Available through 22 Chase warehouses and through distributors.
- 5 Supplied in 6' lengths, resulting in economical installation costs.



Mail Coupon to Dept. AA98

**SEND FOR
FREE
LITERATURE**

Please forward complimentary literature about Chase Thru-Wall Copper Flashing.

NAME _____

ADDRESS _____

CITY _____

STATE _____



Chase

BRASS & COPPER CO.

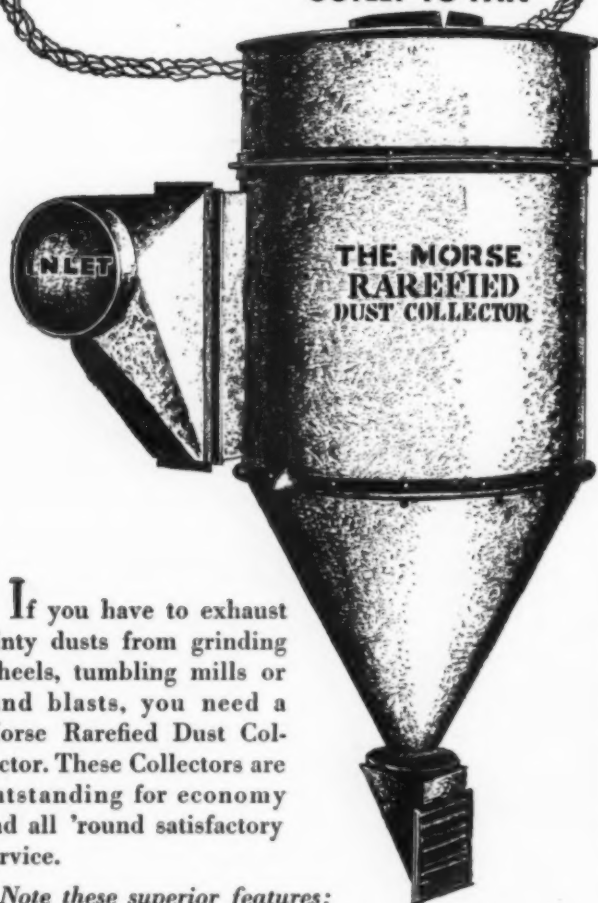
—INCORPORATED—
Waterbury 91, Connecticut
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

—This is the Chase Network—handiest way to buy brass—

ALBANY† ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND
DETROIT HOUSTON† INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE
MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH
PROVIDENCE ROCHESTER† SAN FRANCISCO SEATTLE ST. LOUIS WATERBURY
(†Indicates Sales Offices Only)

**FOR EXHAUSTING FLINTY DUSTS
MORSE RAREFIED
DUST COLLECTORS
DO A BETTER JOB**

OUTLET TO FAN



If you have to exhaust flinty dusts from grinding wheels, tumbling mills or sand blasts, you need a Morse Rarefied Dust Collector. These Collectors are outstanding for economy and all 'round satisfactory service.

Note these superior features:

- | | |
|---|---|
| 1. No abrasive material gets through to the fan. | 5. Collected material is discharged automatically to storage bin. |
| 2. There is a constant air flow at hood inlet. | 6. No undue wear on collector parts. |
| 3. No moving parts. | |
| 4. No cloths or screens to clog and require expensive maintenance or replacement. | |

Write or phone for complete information on these superior collectors. A Goergen-Mackwirth engineer will gladly survey your problem and submit recommendations.

Goergen-Mackwirth

ENGINEERING CO.

813 Sycamore Street Buffalo 12, N. Y.

Phone: Cleveland 6661

SPECIALISTS IN THE MOVEMENT AND CONTROL OF AIR

ship can get a copy under a special provision. The contents of the report are a series of test results that were run in various warm air heating panels in different parts of the country. Along with the text of the report are included reproductions of the slides used with the talk.

Union Guilty of Unfair Labor Practice

IN ITS FIRST RULING ON AN UNFAIR LABOR PRACTICE against a union under the Labor Management Relations Act, the National Labor Relations Board late in July held Local 1 of the A.F.L. Distillery Rectifying and Wine Workers International Union guilty of an illegal secondary strike and boycott.

The Board ordered the union and its agents to: "Cease and desist from engaging in, or inducing the members of Local 1 to engage in, a strike or concerted refusal in the course of their employment to perform services for any employer, where an object thereof is to require any employer or other person to cease doing business with Schenley Distillers Corporation."

The Board found that Local 1 had engaged in a pre-Christmas boycott of Schenley products in New York for the purpose of supporting a strike by Local 38 of the same international union at the Frankfort, Ky., distillery of George T. Stag Company, a wholly-owned subsidiary of Schenley.

Speed Up Orders With a

**BEVERLY
SHEAR**

Throatless shears that cut any shape . . . straight, circular or irregular. **FASTER — accuracy! Order No. 1**

for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless. Available with or without stand.



BEVERLY SHEAR MFG. CO.

3001 W. 110th Place Chicago 43, Ill.

Here's Our New WARMOLATOR '20'



IT'S A 20,000 BTU WALL CIRCULATOR!

The newest addition to the Williams line, the sensational Model "20" is small in size but BIG in performance. About four feet tall, it packs 20,000 Btu's of vented wall heater into the space between 2x4 studs on standard 16-inch centers. No furring or special framing is required to install this compact unit. Entirely new from its air-cooled, drilled port burner and finned heating element to its clean exterior styling, the Williams "20" is designed to circulate plenty of warm air to every corner of the room.

CONVENIENT HI-LO-MEDIUM CONTROL



Just set the knob located at the top of the heater panel and you get the heat you want, high, low, or medium. The knob is at the most convenient level for adults but safely out of children's sight or reach.

Write Department T-1 for Complete Information.

WILLIAMS RADIATOR CO.

Sponsors of Better Heating Since 1916
1821 FLOWER STREET • GLENDALE, CALIFORNIA



EASY TO INSTALL
Fits between the studs
...no framing required.



FITS ANY PLAN

Model "20" is ideal for apartments, homes, offices, guest houses, bathrooms, etc. . . and it's adapted to natural, manufactured or LP gas.



SAFE FOR CHILDREN
Completely enclosed
...no exposed elements
to burn tiny fingers.

AIRITE Direct-Reading AIR VELOCITY METER



8" SCALE—Widest Scale of Any Mechanical Air Velocity Meter Ever Designed!

The AIRITE is an unsurpassed sales and service aid in heating, ventilating and air conditioning work. On installation and service work it is used to determine velocity and direction of air flow from registers and grilles for the purpose of checking rate of air delivery, balancing the system and adjusting deflecting vanes and louvers of registers so as to obtain "draft free" air distribution. These tests cut installation and service time, prevent expensive call-backs, and promote customer goodwill. The AIRITE is equally helpful for selling new equipment or modernization. It can be used in many ways to convincingly demonstrate discomforts and inefficiencies of a worn-out or inadequate system.

The AIRITE is entirely self-contained. It has no hose or probe,

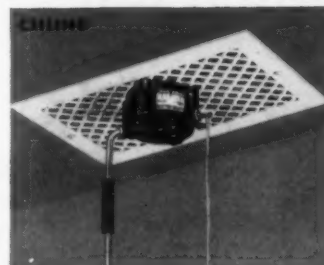
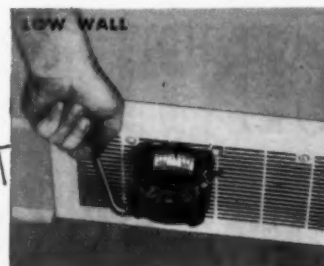
and gives all readings required for heating, ventilating and air conditioning work. The detachable handle facilitates use of the AIRITE at low wall or high side wall registers. By screwing a 1/4" pipe into the handle the AIRITE can be conveniently held against ceiling grille.

The AIRITE is equipped with a unique scale lock which makes it possible to retain the reading until the lock is released. For ceiling grille readings, this lock is easily manipulated by means of a piece of string. This feature makes the AIRITE exceptionally adaptable for indicating air velocity in hard-to-reach or dimly lit locations.

Dealer's Net Price with leatherette carrying case . . . \$19.80

Ask your jobber for the AIRITE or write for Leaflet 749.

BACHARACH INDUSTRIAL INSTRUMENT CO. — 7000 Bennett Street • Pittsburgh 8, Pa.



SUBSTANTIAL PROFITS for YOU—

*Cleaning Furnaces
with the*
**GRAND RAPIDS
De Luxe
FURNACE
CLEANER**



You can put furnace cleaning on a money making basis by using a Grand Rapids Furnace Cleaner. High velocity suction scoops up all deposits of soot, ashes and carbon, cleaning the heating plant and re-establishing full efficiency. Special attachments clean flues, radiators, right angle turns and other hard-to-reach areas. The job is done quickly and completely. Customers are highly satisfied.



The Grand Rapids DeLuxe Furnace Cleaner is also your "in" for more than cleaning profits. By checking over and inspecting the heating plant as you clean it you are in a position to make timely recommendations for new equipment or repairs. This means better service for customers . . . more profits for you.

*Write for complete
information and prices today.*

DOYLE VACUUM CLEANER CO.

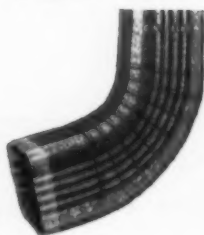
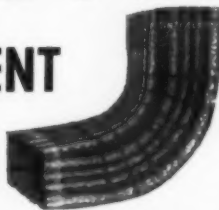
227 Stevens St., S.W.

Grand Rapids 7, Michigan

CINTI ELBOWS

...NEW EQUIPMENT
brings you

FINER ELBOWS



There's only one way to stay out in front in any field and that's to supply the *best available merchandise*. The Cincinnati Elbow Co. with its new automatic equipment has earned this reputation among aggressive sheet metal men. Use Cinti Elbows on your next job . . . you'll find them easier to work with and hot-dipped after formation makes them more durable.

Ask Your Jobber for Them

The Cincinnati Elbow Co.
2627 Colerain Avenue
Cincinnati 14, Ohio

Enforcement of Overtime Interpretation Postponed

ENFORCEMENT OF A NEW INTERPRETATION under the Fair Labor Standards Act regarding certain types of premium payment necessitated by the recent Supreme Court decision in the longshore cases, will not go into effect until September 15, 1948. Previously enforcement had been scheduled to begin July 1st. This was announced recently by William R. McComb, Administrator of the Wage and Hour and Public Contract Division, U. S. Dept. of Labor. In ordering the postponement, Mr. McComb said that information from both labor and management sources indicated that more time was required to make appropriate adjustments, or where necessary, to make revision in collective bargaining agreements due to varying requirements of union agreements as to re-opening of contracts.

Use of Utility Room

AN ESTIMATED SAVING of 9½ per cent in the construction of a house estimated to cost \$7,600 can be made through use of an interior utility room instead of a basement, it is disclosed in Part Two of a three-part article on "Basements vs. No. Basements for Houses," published in Technical Bulletin No. 4 of the Housing and Home Finance Agency.

This saving is \$287 more than the \$435 indicated for the no-basement house discussed in Part One in Technical Bulletin No. 3 in which a utility room in an attached "ell" was substituted for the basement. The additional saving is accounted for largely by the fact that the attached "ell" requires substantially more exterior wall and roof construction.

Except for basement and first-floor construction, the

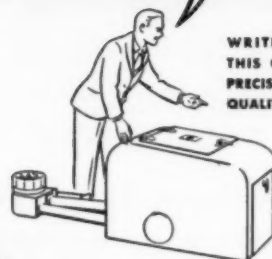
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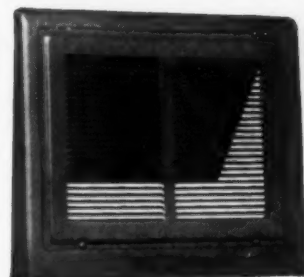
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basement and the basementless houses used in the test are identical in construction methods and materials. The basement house has a gross floor area of 832 sq ft. The no-basement house has 952 sq ft and provides space for the utility room at ground level.

The most important factor in making the cost saving possible in the basementless house, the article states, is the use of the concrete slab which serves as both floor and foundation for the house. As reported in Part One, concrete floors of the type indicated for the basementless house in this study have been tested and found satisfactory for dwelling purposes.

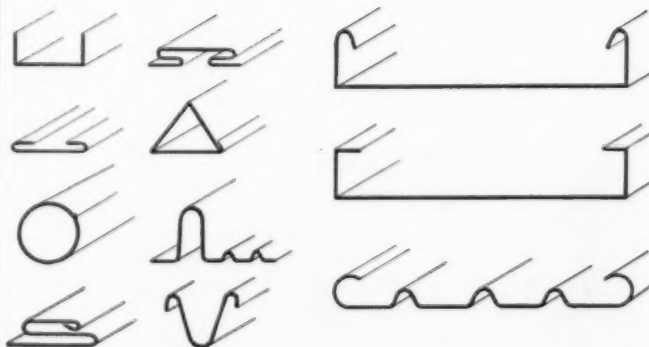
The basementless house is planned for oil or gas heating. Coal heating would require additional storage space for fuel, a larger area to provide access to furnace, space for ash cans, etc., all of which would increase the cost of providing the utility room.

FHA Fourteen Years Old

IN SUMMING UP FOURTEEN YEARS of service with the Federal Housing Administration, which was established in June of 1934, Commissioner Franklin D. Richard announced that the FHA had now insured over 12.5 million dollars of mortgage and property improvement loans. During this period of time the Administration has built up more than 176 million in the net worth of its insurance fund and paid out more than 8 million dollars in dividends to borrowers who have paid off loans.

Commissioner Richard also pointed out that the FHA, although a public service government agency, is self-supporting. Last year its income exceeded operating

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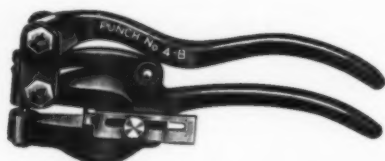
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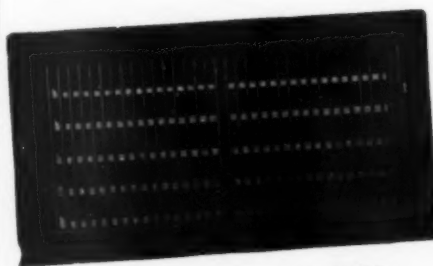
expenses by 30 million dollars. The last twelve months have been the largest volume period in the history of the administration with over 2 billion, seven hundred million insurance written. Of this amount more than 550 million involved small home mortgages insured under Title 2 of the National Housing Act, which is a long range insurance program.

Moisture Condensation

MOIST, HUMID AIR TRAPPED BELOW THE FLOOR of basementless houses with inadequately ventilated crawl spaces, causes a surprising amount of moisture condensation on the framing and floor construction, according to the Housing and Home Finance Agency. This moisture, together with the high temperatures found in the enclosed spaces, and the constant amount of moisture available from the unprotected soil, results in decay leading to sill and joint failure and sagging floors. The agency points out that there is a general lack of appreciation of the fundamental principles leading to decay of lumber and depreciation of other materials in, and adjacent to, unexcavated crawl spaces of basementless houses.

Corrective measures recommended include the cutting of openings in the wall of the unexcavated or crawl space, a total of five to seven feet of openings is generally needed for average sized dwellings. Publications giving detailed information on the control of moisture condensation in crawl spaces include, (1) Technical Bulletin No. 2 of the Housing and Home Finance Agency, (2) Special Release No. 30 Division of Forest Pathology U. S. Dept. of Agriculture, and (3) Farmers Bulletin No. 1993 U. S. Dept. of Agriculture.

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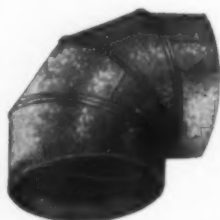
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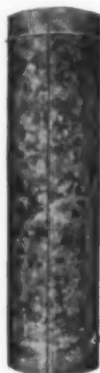
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Roberts—

(From page 78)

made for a reasonable addition to the reserve each year in lieu of a deduction for specific bad debt items. A reasonable charge against profits and a corresponding credit to the reserve for bad debts differs with the business. The usual method of arriving at the figure is to average the bad debt against credit sales for a prior period, 3 to 5 years, and use this percentage. If, for example, credit sales for the past 3 years were \$5,000 and bad debt losses during that time, \$250, a reasonable charge-off for the current year would be 5 per cent of credit sales.

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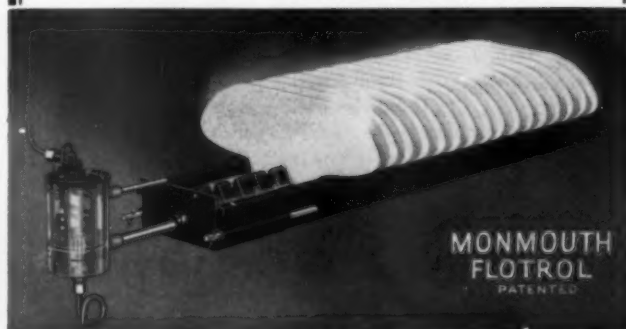
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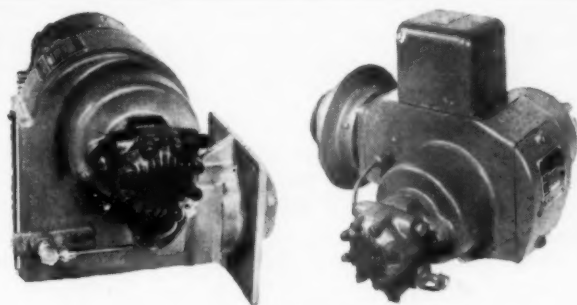
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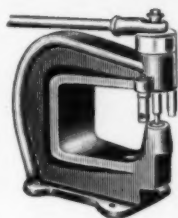
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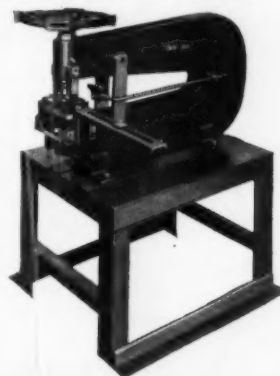
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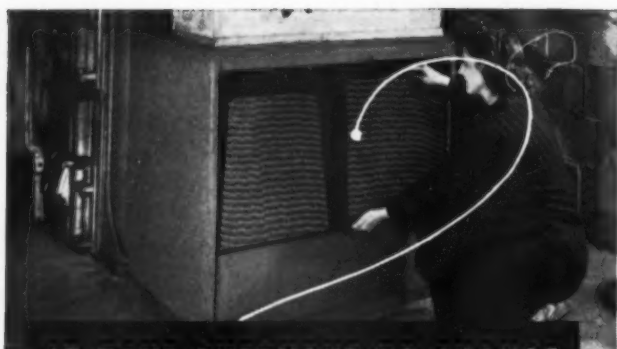
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figures to serve as guides when estimating new work, analyzing current job costs and profit and loss statements. Without experience figures to yardstick current operations, one cannot measure results accurately.

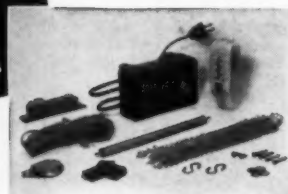
Because of the greater complexity of operation today, businessmen must have a better knowledge of all operating factors touching barter. There are many intricate gears and pistons in the business machine and they must be properly synchronized to get best results. Once a month, give yourself a business management quiz to determine your business I. Q. Through the media of tradepapers, trade associations and business books, brush up on the important elements of business operation and hold a periodical examination to determine what you have learned. Salesmen and other members of your organization should also improve their knowledge of business requisites because the more they know, the better they can handle their jobs.

Colleges all over the country are offering business administration courses. Many students have enrolled. In a few years they will graduate to compete with those now employed in business who will have a hard time to maintain their status quo unless they, too, fortify themselves with a better understanding of what makes business tick. Some of these students will go into business themselves, which will make the outlook less roseate for businessmen who shun a better knowledge of business administration. This is just one more reason why the members of this industry should quiz themselves periodically as to their knowledge of all factors that enter into their business transactions in order to increase their proficiency along these lines.

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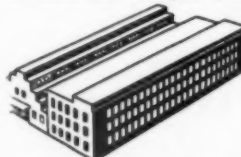
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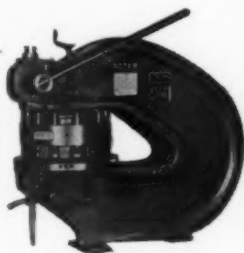
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NEBEL'S FURNACE CEMENT

ASBESTOS
ALUMINUM GRAY

America's Leading Brand
The Furnace Cement of Quality!



NEBEL'S FURNACE CEMENT has been used by many thousands of Furnace Dealers throughout the country. Recent improvement has made Nebel's Cement the outstanding Furnace Cement on the present market.

NEBEL'S FURNACE CEMENT is an all purpose cement. It can be used for resetting furnaces and stoves, also for all high temperature purposes such as joining and bedding fire brick.

THE ALUMINUM GRAY

COLOR makes it desirable to be used on collars, casting fronts and all duct work blending with Galvanized Iron and Aluminum.

NEBEL'S FURNACE CEMENT is ready for use and is easy to apply. It will not roll and follow the trowel. Takes less time, costs less per job.

It is safer to use, free from lamp black, strong acids, sharp abrasives. Will not cut, blister or burn the hands.

NEBEL'S CEMENT is quick setting, lighter in weight, will contract and expand with all castings.

For sale by the leading furnace supply companies. Order now. Write your jobber or direct to factory. Why wait! Packed in 10, 5, 1 1/2 pound cans.

Nebel's Products Manufacturing Company

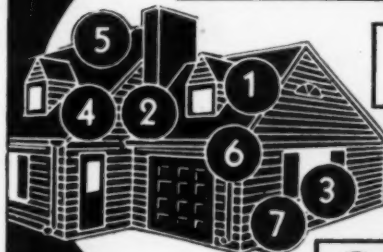
Established 1915

P.O. Box 3942 Shaker Square Station
Cleveland, Ohio

WORKS
EASILY

FORMS
READILY

SOLDERS
EASILY



FOR FLASHING

- 1-VALLEYS
- 2-CHIMNEYS
- 3-WINDOW FRAMES
- 4-EAVES
- 5-RIDGES
- 6-GUTTERS-
- DOWNSPOUTS
- 7-TERMITE SHIELDS

CHINC

That Amazing
New Metal

HIGH grade zinc, copper and magnesium are combined to produce a tough, strong, workable sheet metal at less than half the cost of 16 oz. copper.

Can't rust, solders easily, forms readily, doesn't stain white trim, doesn't corrode in mortar joints, and stands up at the seashore where so many metals meet their doom.

Made in rolls, strips, sheets and a full line of rain carrying equipment, including gutters and downspouts, all 26 U. S. gauge.

Meets government requirements for housing. Sold by distributors everywhere. Send for literature and sample. Another CHENEY Product.

THE ALLAN CORPORATION

623 Prospect Street Trenton 8, New Jersey

BETTER
DELIVERY

VICTORY REGISTER (STYLE V)

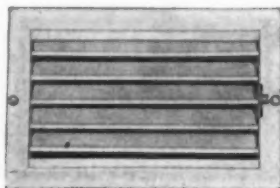
MODERATELY
PRICED

A ONE-PIECE REGISTER OF STURDY CONSTRUCTION PERFORMANCE

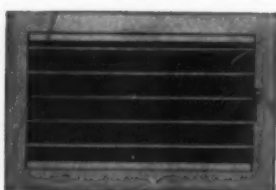
Up-Down deflection as required for "Good Practice" rating by "YARDSTICK", published by National Warm Air Heating and Air Conditioning Association.



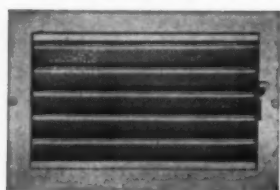
CLOSED



DOWN DEFLECTION



STRAIGHT



UP DEFLECTION

Write for Catalog #12 showing all types
of Air Conditioning Registers and Grilles.

REGISTER & GRILLE MANUFACTURING CO., Inc.
66 BERRY STREET BROOKLYN 11, N. Y.

Mirabile—

(From page 83)

9. Poor combustion chamber design or construction.
10. Nozzle may need to be pulled into air tube $\frac{1}{4}$ to $\frac{1}{2}$ in. depending on air cone diameter. Use a flame mirror to check oil spray. Spray should miss the air cone by $\frac{3}{8}$ to $\frac{1}{2}$ in.

High stack temperature is caused by:

1. Excess air—reduce to a minimum.
2. Overfiring—install smaller nozzle.
3. Poor combustion chamber—replace.
4. Furnace needs baffle—install baffle.
5. Poor furnace—install new furnace.
6. Heating surfaces covered with soot—clean furnace.

Aim for CO₂ readings of 10.5 to 12 per cent, 500 F stack temperatures and .02 in. overfire draft. These readings will approximate 80 per cent combustion efficiency and insure customer satisfaction.

Stainless Steel—

(From page 106)

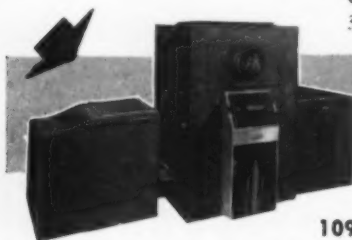
Readily Fabricated

Stainless steels of proper composition are available for products which may be fabricated by any of the methods used for carbon steel.

Flat-rolled stainless steel is drawn as deeply as the finest deep-drawing carbon steel. It can be spun or formed readily. Bar and wire can be cold-worked or hot-forged into any required shape and machined with

EFFICIENT HEAT *without* CLINKER NUISANCE in the NEW **Majestic** STOKER FURNACE

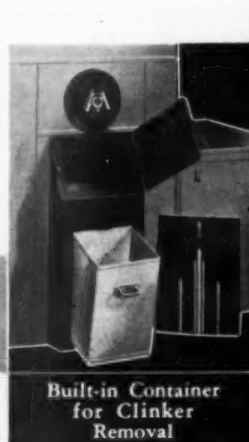
This smartly designed, rugged unit is tops in home-heating service, convenience, and economy. Special crown radial fins boost heat output. Inner can permits clean, easy clinker disposal. Any domestic stoker fits either side. It's a Majestic climax to 38 years' experience in heating.



Made of HEAVY DUTY STEEL
For GRAVITY or FORCED AIR
SYSTEMS

THE **Majestic** CO.

1094 Erie St. Huntington, Ind.



Built-in Container
for Clinker
Removal



Conductors
for More Heat

How You Make Money Is Your Business



Why not make your business make more money for you? By investing a small sum in a Super Red Streak Furnace Cleaner you can make a good profit on cleanings plus a still bigger profit on repairs and replacements which show up when the furnace is cleaned. A Super Red Streak cuts your "selling cost" to nothing on new grates, re-sets, new plants, etc.

You can use a Super Streak for five days free and keep what it makes you under our generous trial offer. Write for complete information.

National Super Service Co., Inc.

1944 N. 13th St.

National Super Service Company of Canada
Toronto, Ont.

Toledo 2, Ohio

Vancouver, B.C.



Std. Arr. No. 1
for Belt Drive

New and Improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY

1817 South 66th Street

Milwaukee, Wis.

FROM COAST TO COAST

Penn TURBINE VENTILATORS

ARE ON THE JOB

ROTOR HEAD
100% WEATHERPROOF

DUST TIGHT STEEL
BALL BEARINGS

RIGIDLY BRACED
HEAVY GAGE STEEL

CONSTANT - AUTOMATIC - SILENT

BUILT TO LAST

Your local jobber can give you immediate delivery on these quality ventilators—all sizes. Unequalled for general ventilation purposes. Write for free information TODAY.



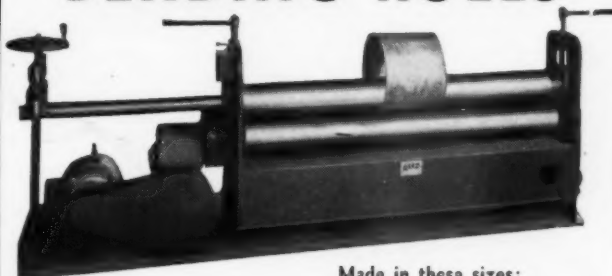
PENN VENTILATING CO.

Goodman above Allegheny Avenue
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Manufacturers of

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For Over 25 Years THE BUILDER'S ROOF TOP LINE

NOW AVAILABLE! REED Series 650 PYRAMID TYPE — ALL STEEL BENDING ROLLS



MODEL
654
655
656
658

Made in these sizes:

CAPACITY
4FT X 7/16" PLATE
5FT X 3/8" PLATE
6FT X 5/16" PLATE
8FT X 1/4" PLATE

Here's the roll of a thousand uses, for both job and production shops. Featuring all steel construction, bronze bearings and totally enclosed silent worm gear drive, this bending roll gives high roll clearance between top and bottom rolls for rolling of heavy bars and small structural shapes. Lower rolls are closely spaced to minimize flat spot at seams.

Built with 7 1/2" Dia. top roll and 6 1/2" Dia. lower rolls.
Comes complete with motor and reversing control ready to operate.

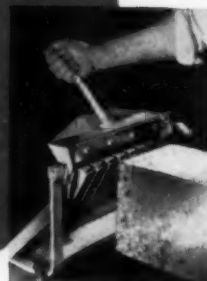
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REED ENGINEERING COMPANY

ENGINEERS AND MANUFACTURERS

CARTHAGE, MISSOURI U.S.A.

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Bends perfect cleat edges in less than 5 seconds.

Bends drive cleats, that slide on easily by hand, in less than 8 seconds.

No hammering, no prying with a screw driver, yet you get a tighter, more rigid seam than with ordinary hand bending methods.

This amazing time and money saver is portable, light and sturdy . . . can be used in or out of it's bench frame . . . can be carried right to the job. Every erection team should carry one as standard equipment.

SEND for your FREE descriptive literature TODAY telling you how you can make MORE PROFIT ON EVERY JOB with the new SMITH CLEAT BENDER.

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SEQUOIA FURNACE

Looks Modern



Compact cabinet is designed and finished for the modern home. Rounded corners. Less floor space. Install in basement, kitchen, or other rooms.

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Series "UM"
Gas Fired

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SEQUOIA MANUFACTURING COMPANY

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**REPAIR PARTS
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OMAHA STOVE REPAIR WORKS
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SINCE 1882

**Improve Your Service
Increase Your Sales**



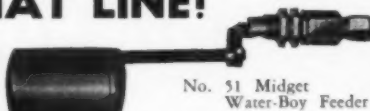
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Approved by oil burner manufacturers and testing laboratories. Will not clog holes, leave a residue or overheat vital parts. Also effective in gas and coal units. Special Clean Sweep sprayer for faster, more economical service available. Ask your Jobber or write us today. (A few Jobber franchises still available.)

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Float Control Valve

Used to maintain water level in humidifiers, air conditioners, evaporative coolers, etc. Takes very small space. Quickly installed. Capacity 1 qt. per min. at 50 lbs. pressure.

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Fits $\frac{1}{2}$ " and $\frac{3}{4}$ " iron water pipe. Simply drill $\frac{1}{4}$ " hole. Outlet provided with union coupling for $\frac{1}{4}$ " O.D. copper tubing.

Write for prices, or see your jobber.

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ease. Stainless steels are welded by oxy-acetylene, metal arc, resistance, pressure, atomic hydrogen, and inert arc methods.

Fabricators of stainless steel, who make thousands of useful and decorative articles, have contributed much to its development. Many enterprising business men gained their first acquaintance with the market possibilities of stainless steel during World War II. Some were civilians, some in uniform. There are about 5,000 job-fabricators of stainless steel in the country, and the number continues to grow.

Mansell—

(From page 108)

non-adherent substance which undermines the adhesion of the paint film.

Zinc, itself, reacts with the normal ingredients contained in the atmosphere. As soon as it is exposed it forms zinc oxide and zinc carbonate on its surface. These compounds react with some of the paint constituents forming a layer of non-elastic, non-adhering metallic soap between the zinc surface and the paint film. This soapy material adheres neither to the paint film nor to the metal, and ultimately causes a separation to occur. The constant turmoil resulting from these chemical reactions combined with the internal tensions that exist in a paint film as it undergoes its normal changes during the aging process, all combine together causing the paint to break loose.



A HIT IN 1947 —

Heat that cold room with this self cooled booster fan installed right in the warm air pipe. Long wearing, exceptionally quiet, efficient yet simple. Fits pipe sizes from 8" to 12", operates from house current, burns no

IMPROVED IN 1948

more electricity than a 25 watt bulb. Thousands now in use. New improved 1948 model moves more air, better than ever. Dealers get on the band wagon today, write for prices.

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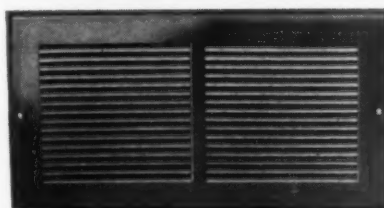
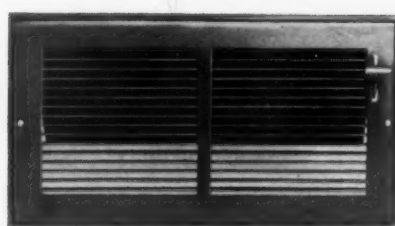
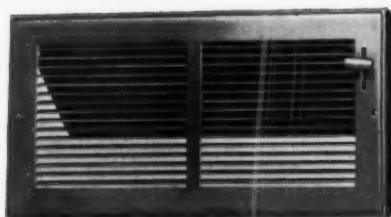
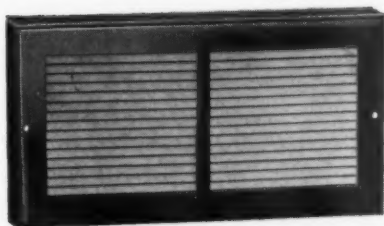
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COPPER 3 WAY BOND

CHENEY FLASHING
16 OZ.
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CHENEY FLASHING CO. Trenton, N. J.

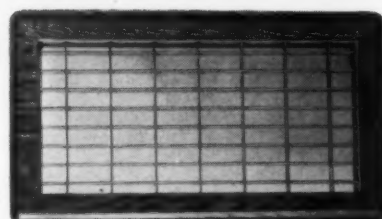


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**CLEAN—AUTOMATIC—ECONOMICAL
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Engineered and built by pioneers in
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Sturdy, long life, trouble free service. Underwriters
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TINIT is compounded by a process that never varies . . . you're sure that TINIT will always work the same . . . always dependable. Cleans, tins and fluxes stainless steel, black iron, hard-drawn copper and all metals in one quick operation. Sold by refrigeration service, tinning supply, automotive and other jobbers for 19 years.

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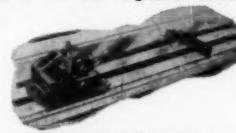
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Speed up your work—without an 8' or 10' Square Shear

The Rotary action of cutters produces a neat, accurate clean edge.



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STAMPINGS & SPINNINGS
Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.
If you don't have catalog K, send for it NOW.

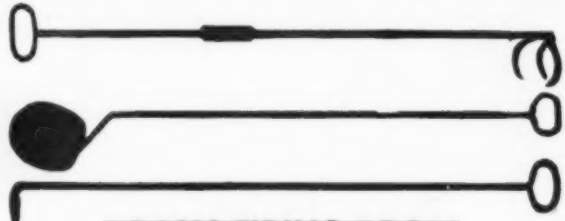
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Heating Sheet Metal  Air Conditioning Supplies

Furnace pipe, adjustable elbows and Fittings

ALSO: Complete line sheet metal hand tools

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Incidentally, the fact that the galvanized surface is painted does not prevent the attack of the gases present in the atmosphere. Paint films are not completely impermeable; they do permit a breathing action to continue. The zinc atoms, themselves, will tend to attract the oxygen and carbon dioxide present in the atmosphere, and these latter gases will be pulled through the paint coating onto the interface; here they will react to form oxides and carbonates, thus beginning the sequence of reactions as indicated in the previous paragraphs.

There are many more theories which have been put forward to explain why paint will not bond to galvanized steel. Each new theory brought in its train a variety of new methods and materials suggested to overcome the adhesion difficulties.

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Write for Prices and Name of your nearest Jobber.

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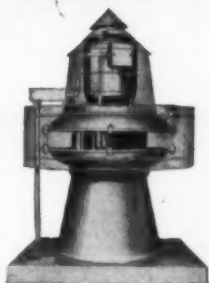


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3608 Payne Ave. Cleveland 14, Ohio

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Here's a new idea that revolutionizes ventilating... the Air-Van Power Exhauster moves 30% more air at less power cost! Accepted everywhere for its phenomenal performance, superior design and splendid construction, the Air-Van Power Exhauster is your answer to all ventilating problems! Write for complete details today.

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Chicago Steel Bending Brake

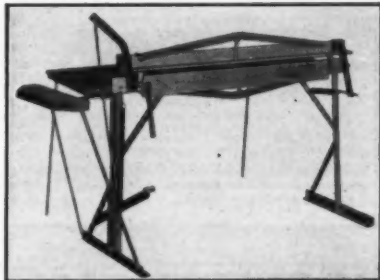


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Portable - Sturdy
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The 4' Brake weighs 175 lbs. Can be ready to transport by removing 4- $\frac{1}{2}$ nuts in 5 minutes. Folds into a bundle 5'-x 11" x 6'. Easily handles 26 ga. Iron. Has Slip Off Feature. 2-Tool Benches. Indispensable if you work on the job. THE BOBBIE 1 ft. BRAKE Handles 26 ga., is for Small Fast Jobs as Boxes — Outlets, etc., where production and ease of operation are important.

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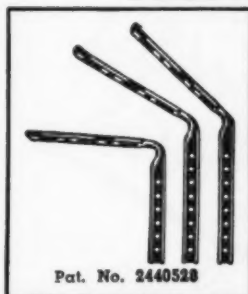
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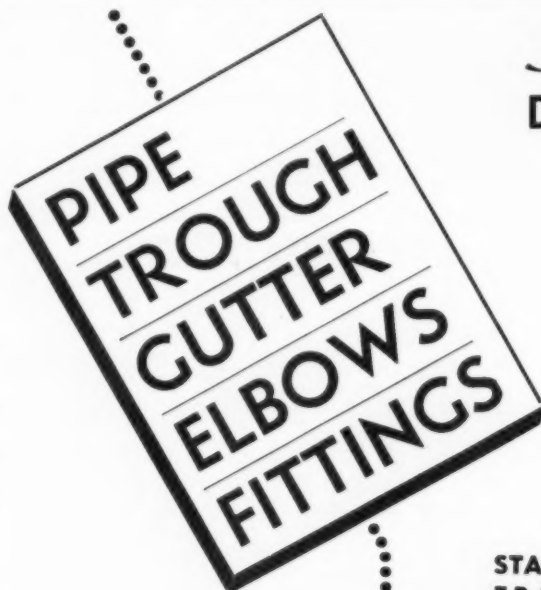
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Galvanized, cold and hot rolled aluminum.
Stainless and copper 6" minimum, width to 36"
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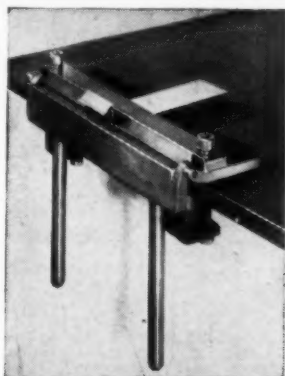
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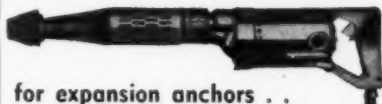
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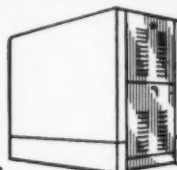
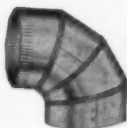
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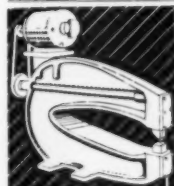
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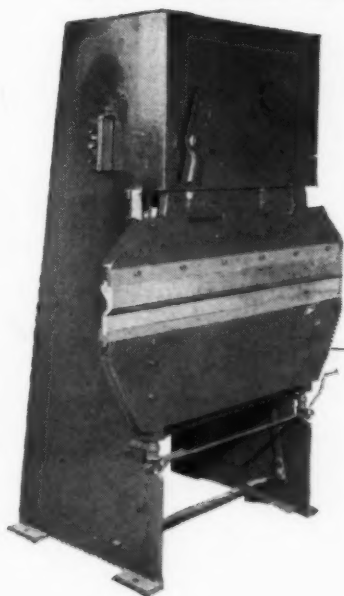


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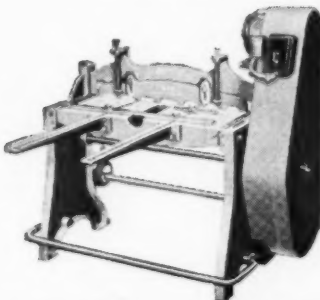
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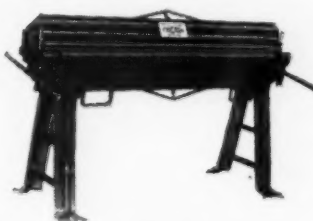


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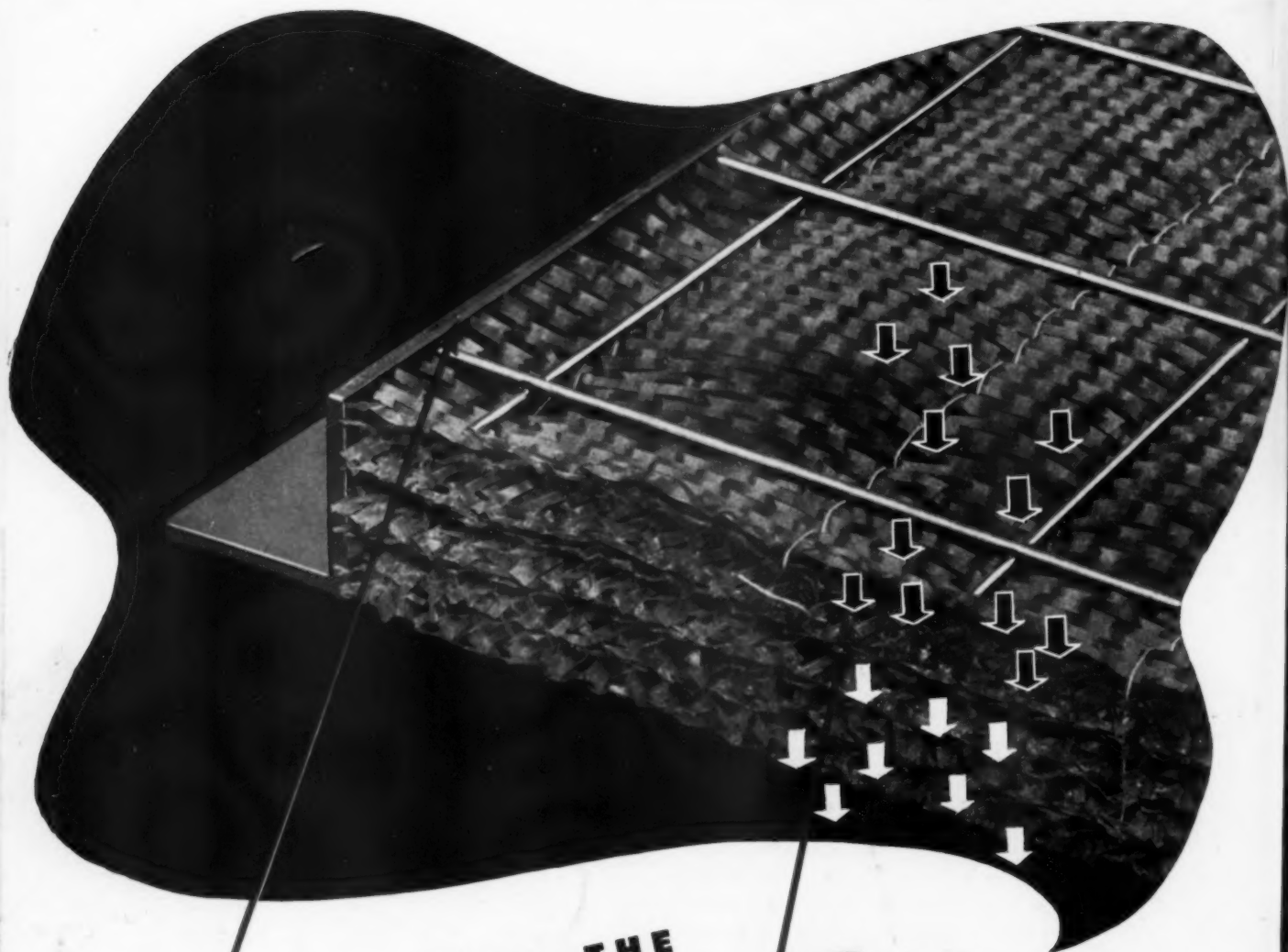
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